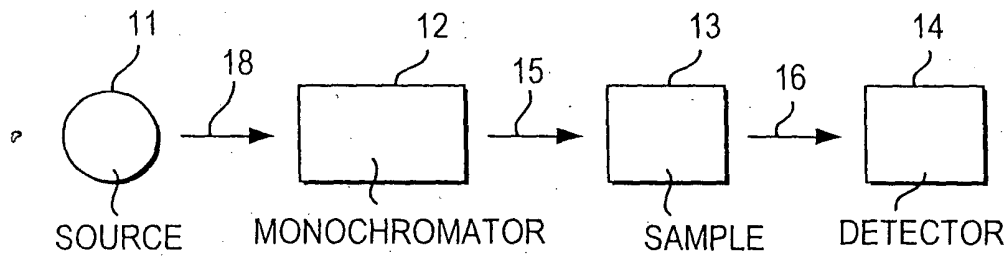
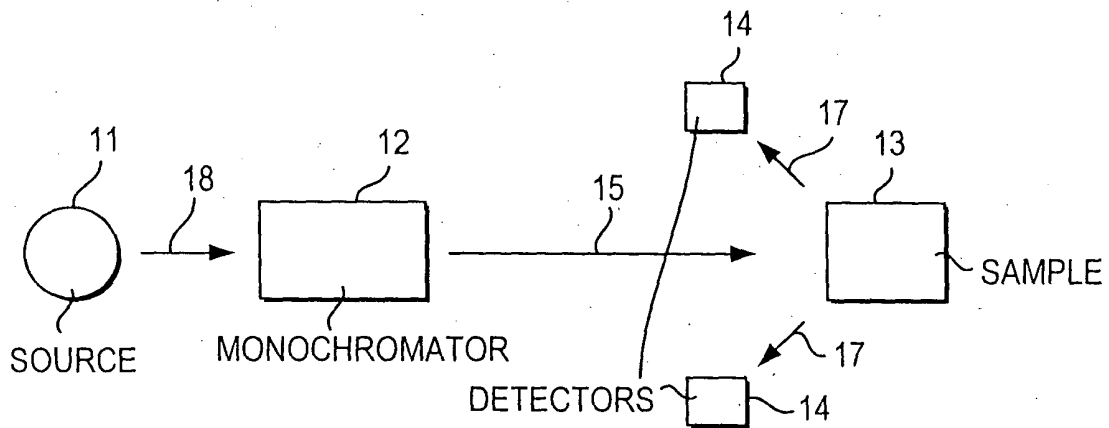


FIG. 1



NEAR-INFRARED TRANSMITTANCE (NIT)

FIG. 2(A)

NEAR-INFRARED REFLECTANCE (NIR)

FIG. 2(B)

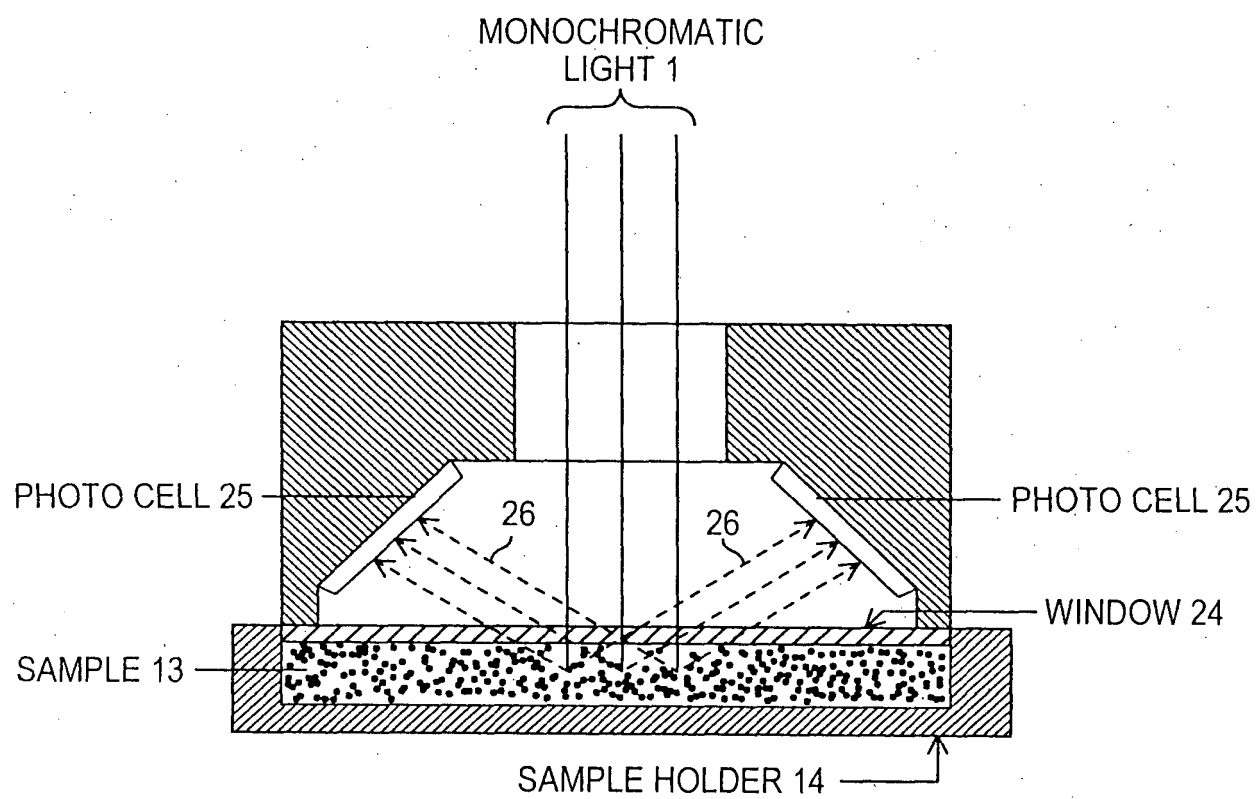
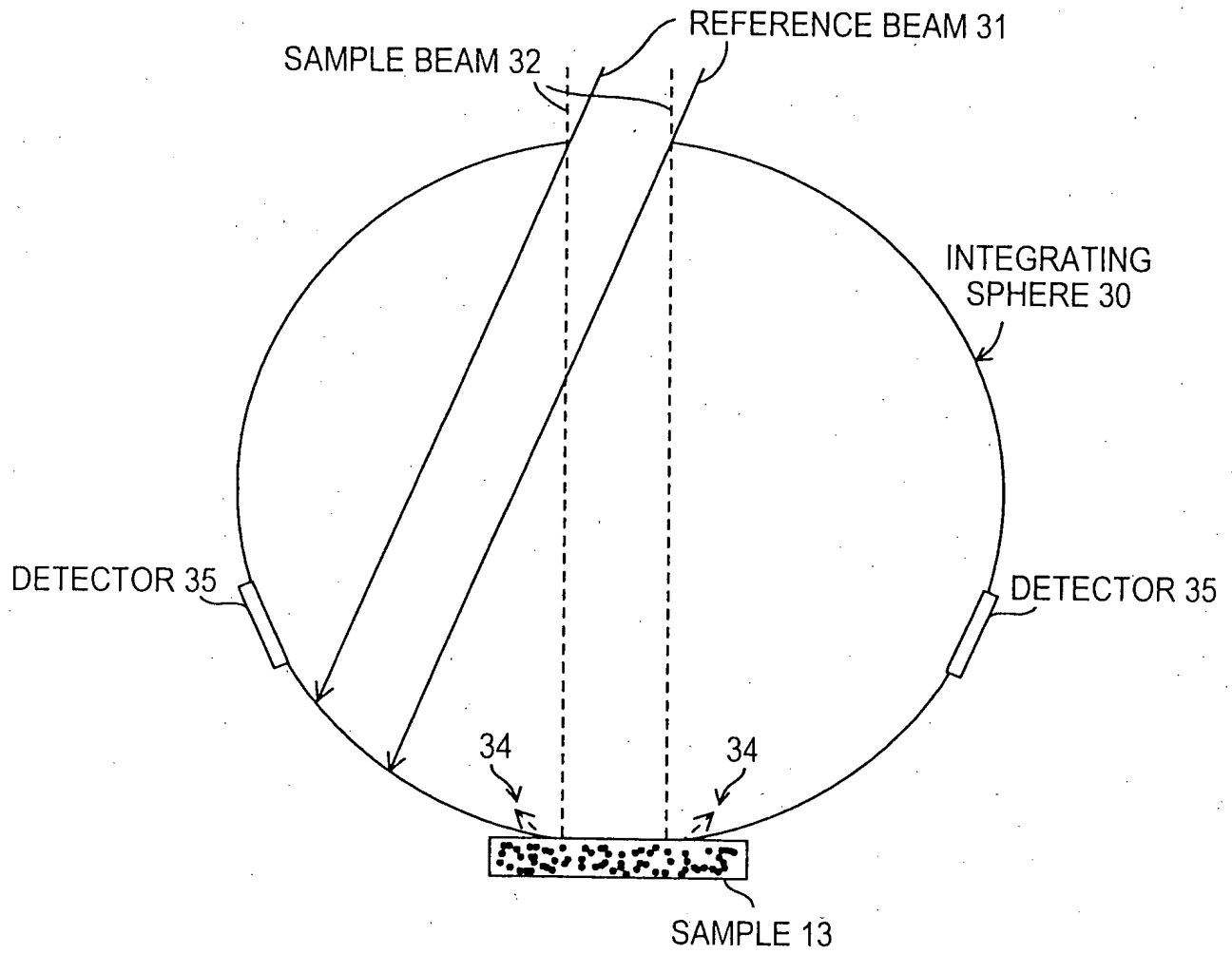
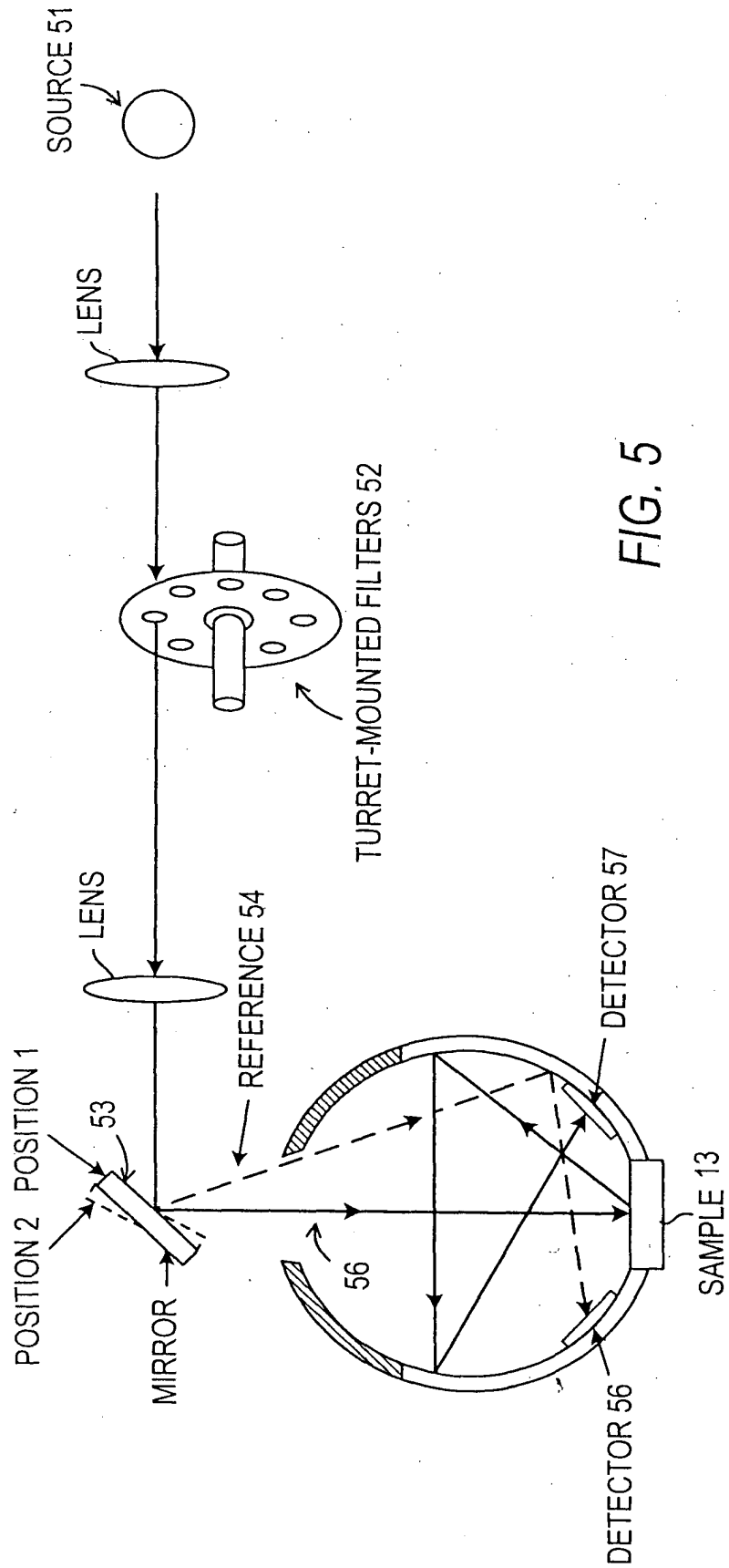
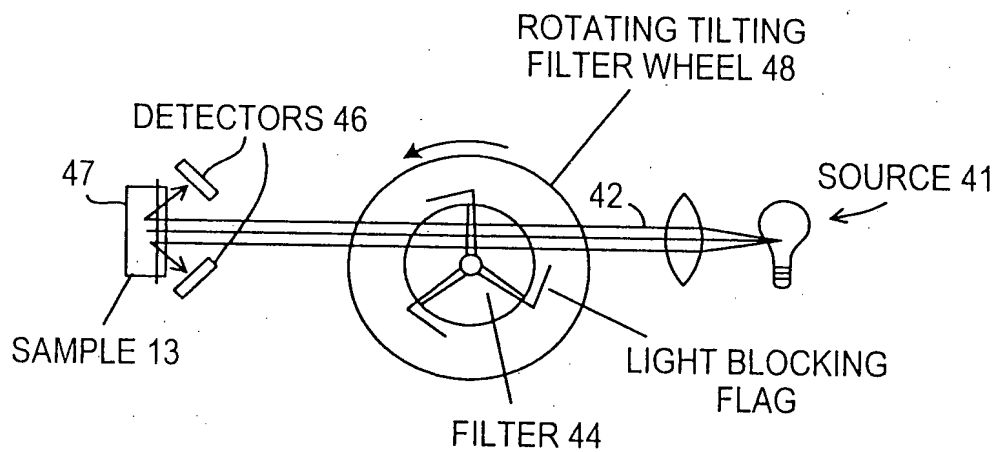


FIG. 3

**FIG. 4**



**FIG. 6**

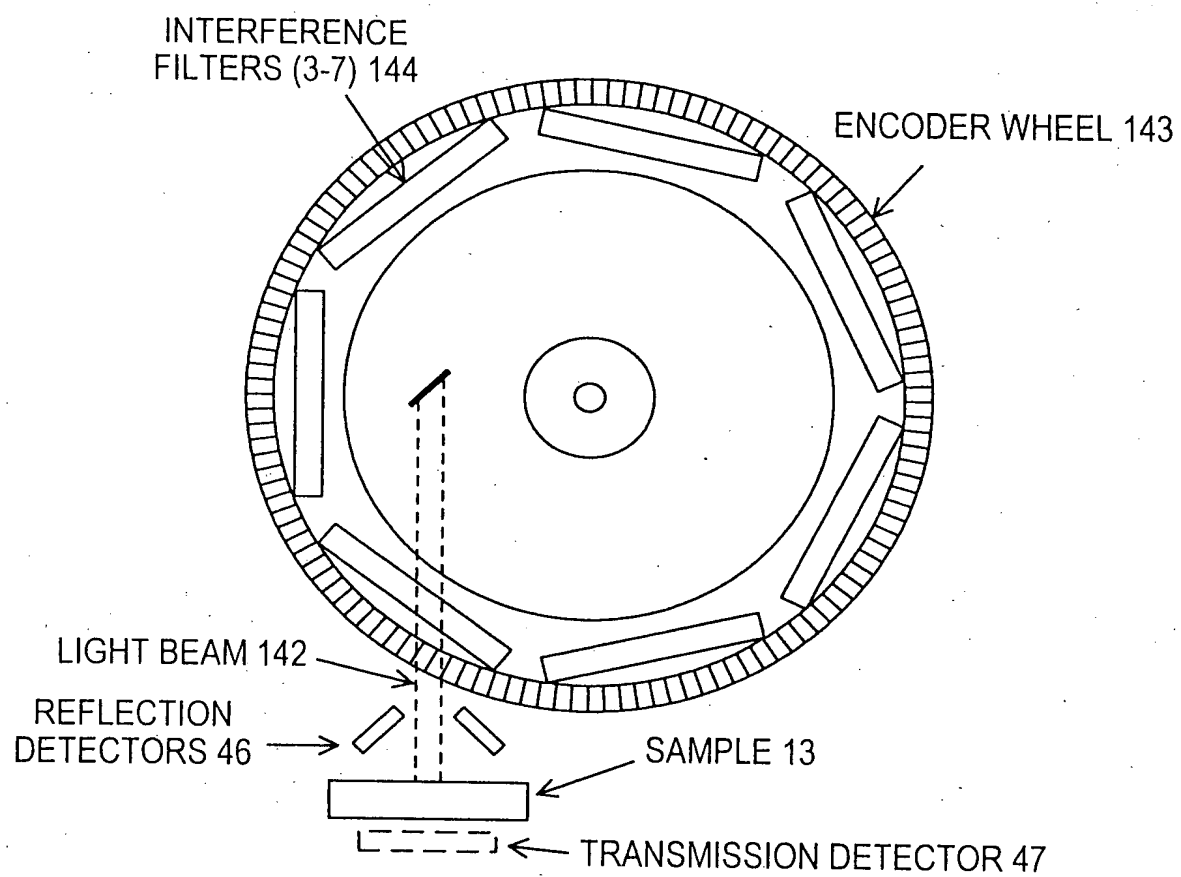


FIG. 7

FIG. 8(A)

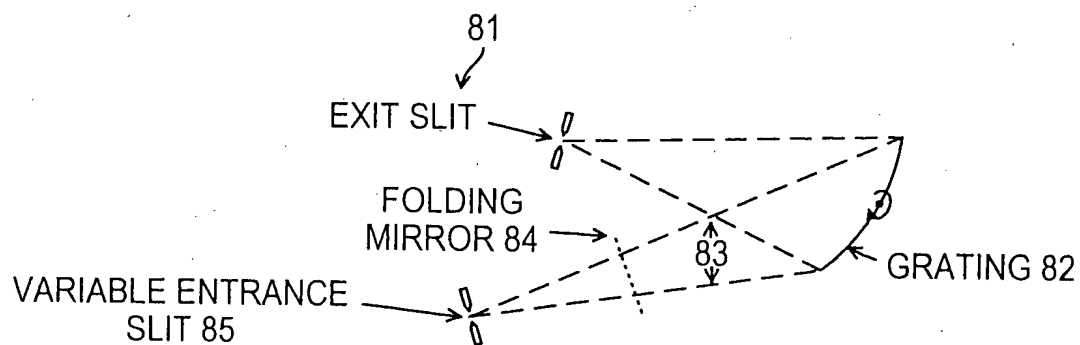
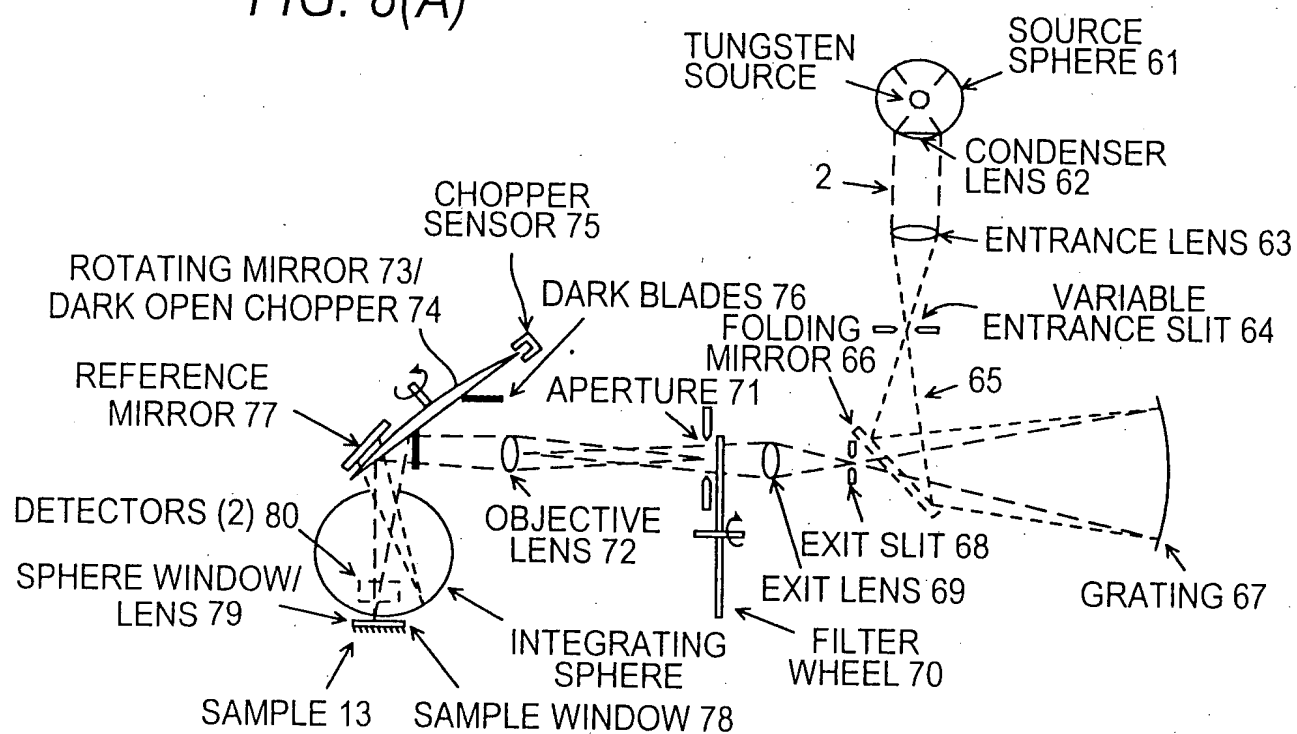


FIG. 8(B)

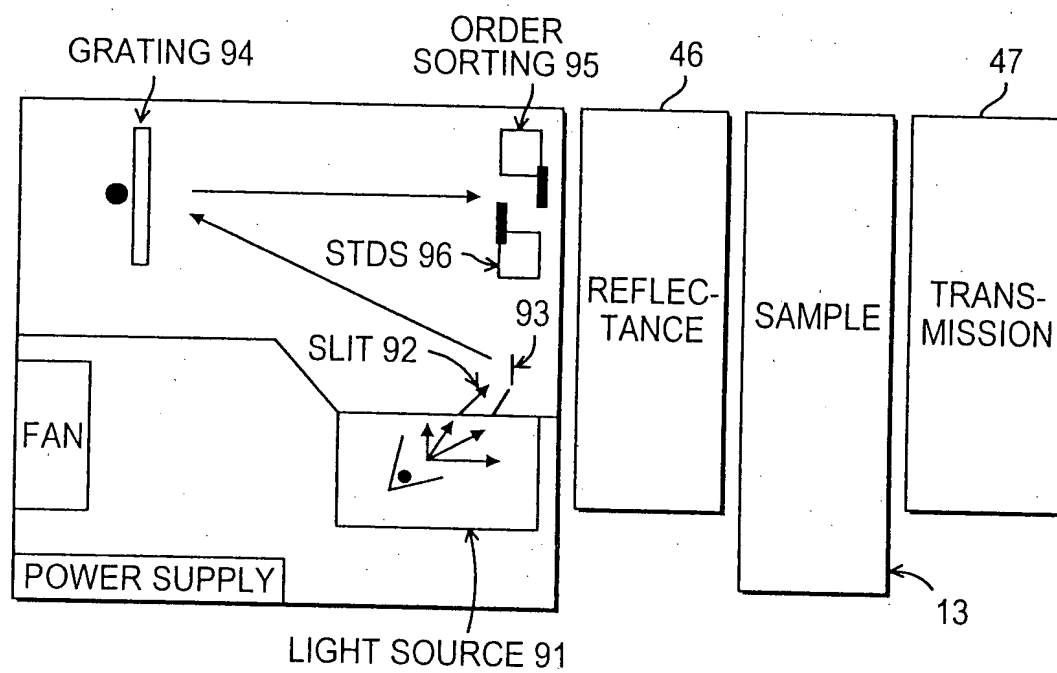


FIG. 9

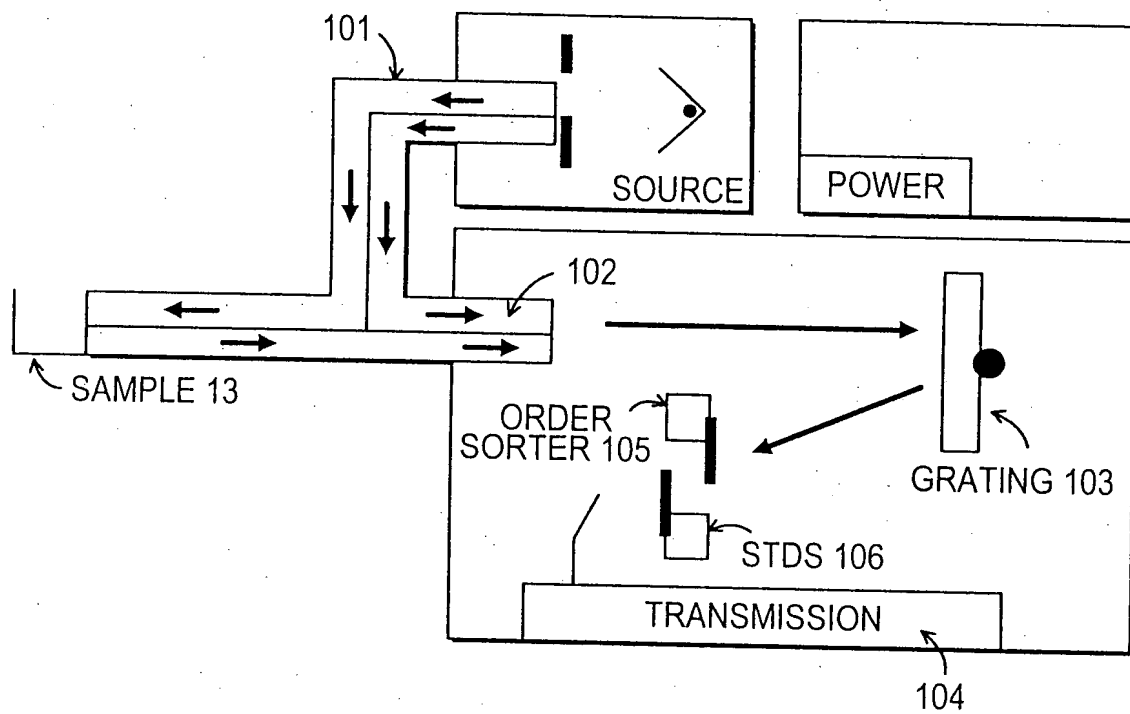


FIG. 10

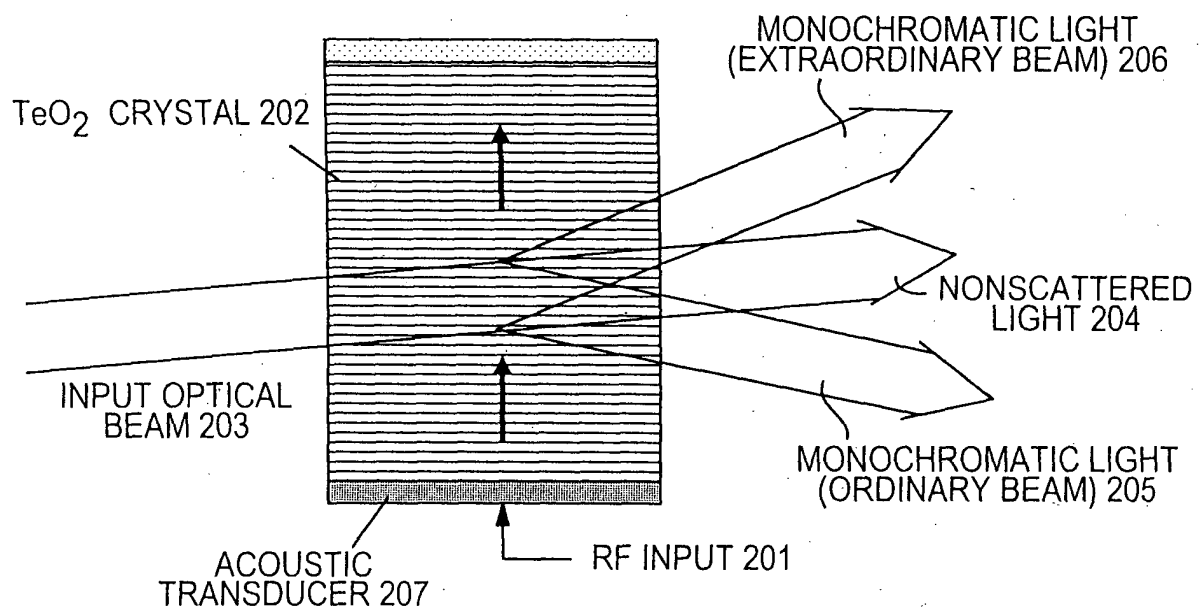


FIG. 11

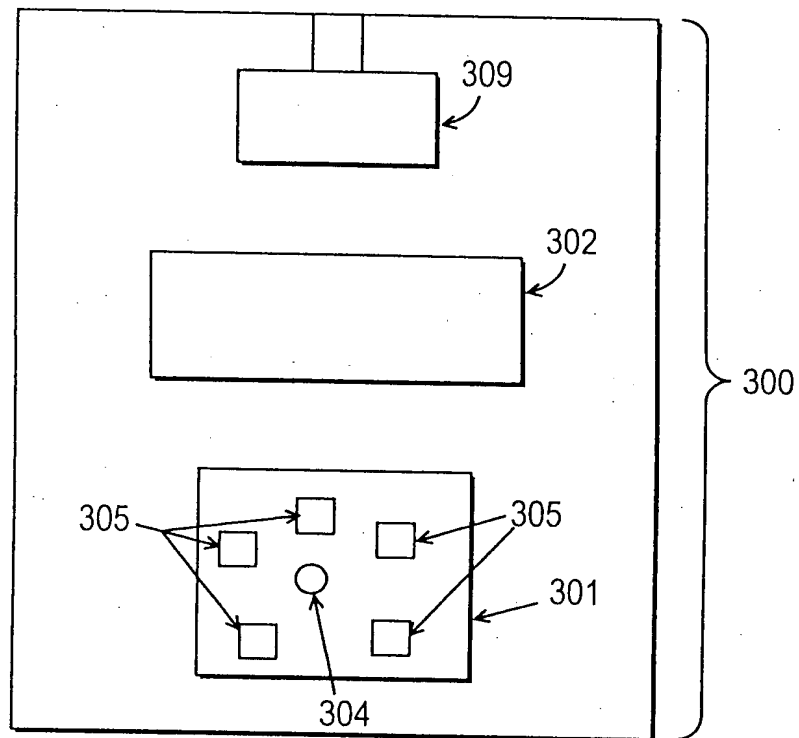


FIG. 12(A)

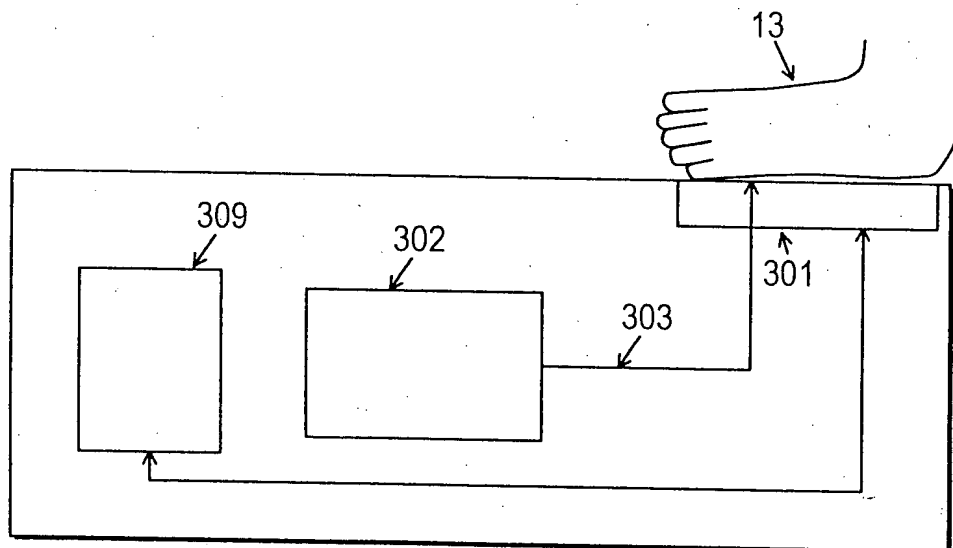
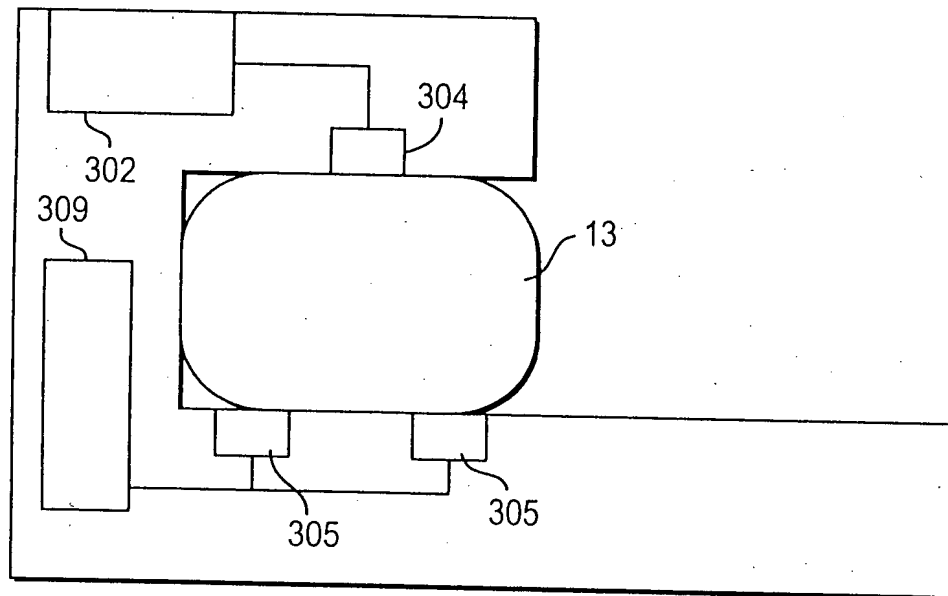


FIG. 12(B)

*FIG. 12C*

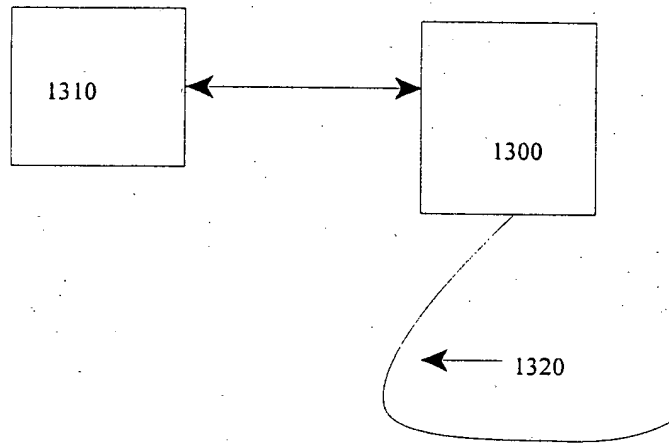


Fig. 13

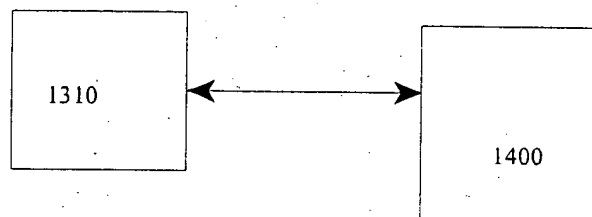


Fig. 14

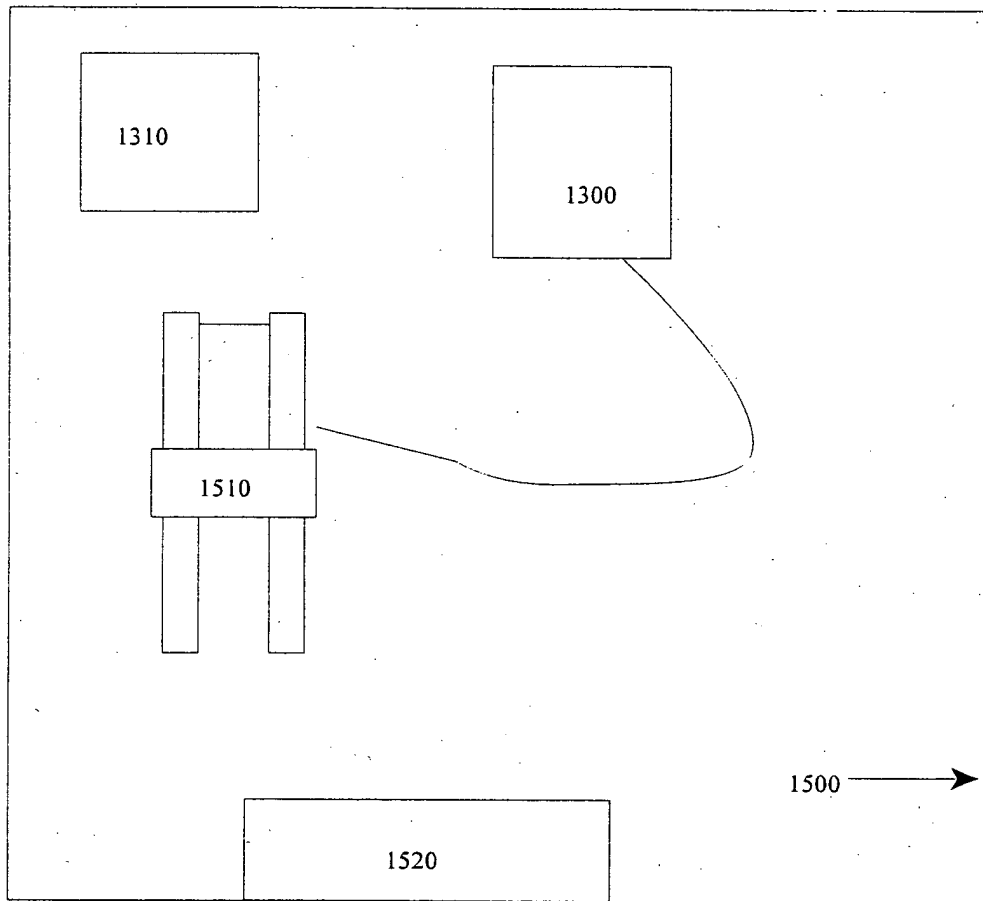


Fig. 15

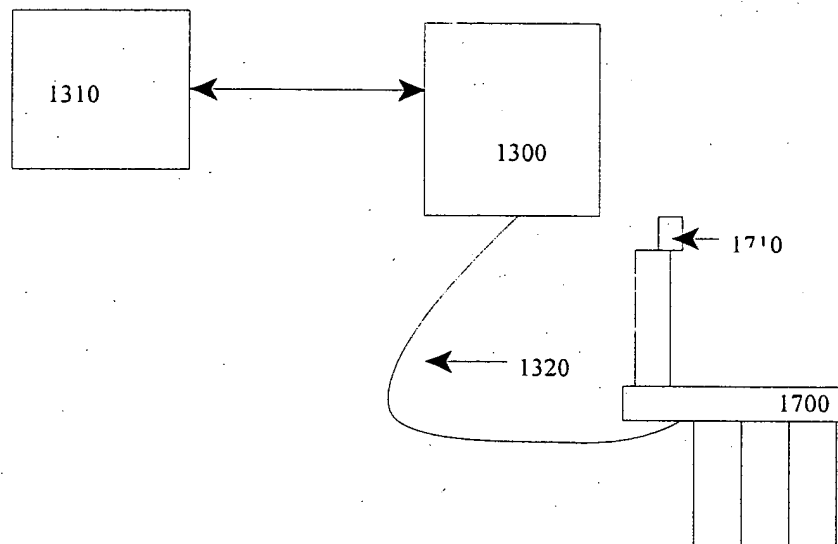


Fig. 16

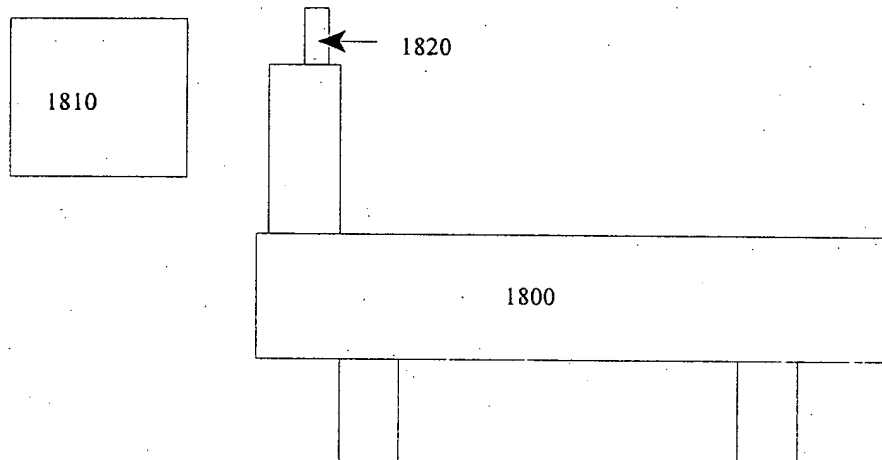


Fig. 17

DIFFUSE REFLECTANCE TRANSFORMS

SECOND TRANSFORM:

1ST TRANSFORM	N	B	N	F	S	M	K	S	R	M	S	S	A
	U	A	O	I	E	U	U	M	A	E	G	G	B
	L	S	R	R	C	L	B	O	T	A	D	D	S
	L	E	M	S	N	T	L	O	I	N	E	E	2
	S	C	A	T	D	S	M	T	O	C	R	R	R
		O	L	D	D	C	U	H		N	I	I	E
		R	I	R	R	A	N	N		T	V	V	F
		R	Z	V	V	T	K	G		R	1	2	L

NULLS	1	1	1	1	1	1	1	1	1	0	1	1	1
BASECORR	0	0	1	1	1	0	0	1	1	0	1	1	1
NORMALIZ	0	1	0	1	1	0	0	1	0	0	1	1	1
FIRSTDRV	0	0	1	0	0	0	0	1	0	0	0	0	0
SECNDDRV	0	0	1	0	0	0	0	1	0	0	0	0	0
MULTSCAT	0	0	0	1	1	0	1	1	0	0	1	1	1
KUBLMUNK	0	1	1	1	1	1	0	1	0	0	1	1	0
SMOOTHNG	0	1	1	1	1	1	1	0	0	0	1	1	1
RATIO	0	0	0	0	0	0	0	0	0	0	0	0	0
MEANCNTR	0	0	0	0	0	0	0	0	0	0	0	0	0
SGDERIV1	0	0	1	0	0	0	0	1	0	0	0	0	0
SGDERIV2	0	0	1	0	0	0	0	1	0	0	0	0	0
ABS2REFL	0	1	1	1	1	1	0	1	0	0	1	1	0

FIG. 18

DIFFUSE REFLECTANCE RATIOS

DENOMINATOR TRANSFORM

NUMERATOR TRANSFORM	N U L L S	B A S E C O R R	N O R M A L I Z	F I R S T D R V	S E C N D D R V	M U L T S C A T	K U B L M U N K	S M O O T H N G	R A T I O	M E A N C N T R	S G D E R I V 1	S G D E R I V 2	A B S 2 R E F L
NULLS	1	1	0	0	0	0	0	0	0	0	0	0	0
BASECORR	0	1	0	0	0	0	0	0	0	0	0	0	0
NORMALIZ	0	1	1	0	0	0	0	0	0	0	0	0	0
FIRSTDRV	1	0	0	1	0	0	0	0	0	0	0	0	0
SECNDDRV	1	0	0	0	1	0	0	0	0	0	0	0	0
MULTSCAT	0	1	0	0	0	1	0	0	0	0	0	0	0
KUBLMUNK	0	1	0	0	0	0	1	0	0	0	0	0	0
SMOOTHNG	0	1	0	0	0	0	0	1	0	0	0	0	0
RATIO	0	0	0	0	0	0	0	0	1	0	0	0	0
MEANCNTR	0	0	0	0	0	0	0	0	0	0	0	0	0
SGDERIV1	1	0	0	0	0	0	0	0	0	0	1	0	0
SGDERIV2	1	0	0	0	0	0	0	0	0	0	0	1	0
ABS2REFL	0	1	0	0	0	0	0	0	0	0	0	0	1

FIG. 19

DIFFUSE TRANSMITTANCE TRANSFORMS

SECOND TRANSFORM:

1ST TRANSFORM	N U L L S	B A S E C O R R	N O R M A L I Z	F I R S T D R V	S E C N D D R V	M U L T S C A T	K U B L M U N K	S M O O T H N G	R A T I O	M E A N C N T R	S G D E R I V 1	S G D E R I V 2	A B S 2 R E F L
NULLS	1	1	1	1	1	1	0	1	1	0	1	1	1
BASECORR	0	0	1	1	1	0	0	1	1	0	1	1	1
NORMALIZ	0	1	0	1	1	0	0	1	0	0	1	1	1
FIRSTDRV	0	0	1	0	0	0	0	1	0	0	0	0	0
SECNDDRV	0	0	1	0	0	0	0	1	0	0	0	0	0
MULTSCAT	0	0	0	1	1	0	0	1	0	0	1	1	1
KUBLMUNK	0	0	0	0	0	0	0	0	0	0	0	0	0
SMOOTHNG	0	1	1	1	1	1	0	0	0	0	1	1	1
RATIO	0	0	0	0	0	0	0	0	0	0	0	0	0
MEANCNTR	0	0	0	0	0	0	0	0	0	0	0	0	0
SGDERIV1	0	0	1	0	0	0	0	1	0	0	0	0	0
SGDERIV2	0	0	1	0	0	0	0	1	0	0	0	0	0
ABS2REFL	0	1	1	1	1	1	0	1	0	0	1	1	0

FIG. 20A

DIFFUSE TRANSMITTANCE RATIOS

DENOMINATOR TRANSFORM

NUMERATOR TRANSFORM	N U L L S	B A S E C O R R	N O R M A L I Z	F I R S T D R V	S E C O N D D R V	M U L T S C A T	K U B L M U N K	S M O O T H I N G	R A T I O	M E A N C N T R	S G D E R I V 1	S G D E R I V 2	A B S 2 R E F L
------------------------	-----------------------	--------------------------------------	--------------------------------------	--------------------------------------	---	--------------------------------------	--------------------------------------	---	-----------------------	--------------------------------------	--------------------------------------	--------------------------------------	--------------------------------------

NULLS	1	1	0	0	0	0	0	0	0	0	0	0	0
BASECORR	0	1	0	0	0	0	0	0	0	0	0	0	0
NORMALIZ	0	1	1	0	0	0	0	0	0	0	0	0	0
FIRSTDRV	1	0	0	1	0	0	0	0	0	0	0	0	0
SECNDDRV	1	0	0	0	1	0	0	0	0	0	0	0	0
MULTSCAT	0	1	0	0	0	1	0	0	0	0	0	0	0
KUBLMUNK	0	0	0	0	0	0	0	0	0	0	0	0	0
SMOOTHNG	0	1	0	0	0	0	0	1	0	0	0	0	0
RATIO	0	0	0	0	0	0	0	0	0	0	0	0	0
MEANCNTR	0	0	0	0	0	0	0	0	0	0	0	0	0
SGDERIV1	1	0	0	0	0	0	0	0	0	0	1	0	0
SGDERIV2	1	0	0	0	0	0	0	0	0	0	0	1	0
ABS2REFL	0	1	0	0	0	0	0	0	0	0	0	0	1

FIG. 20B

CLEAR TRANSMITTANCE TRANSFORMS

SECOND TRANSFORM:

1ST TRANSFORM	N U L L S	B A S E C O R R	N O R M A L I Z	F I R S T D R V	S E C O N D D R V	M U L T S C A T	K U B L M U N K	S M O O T H I N G	R A T I O	M E A N C N T R	S G D E R I V 1	S G D E R I V 2	A B S 2 R E F L
------------------	-----------------------	--------------------------------------	--------------------------------------	--------------------------------------	---	--------------------------------------	--------------------------------------	---	-----------------------	--------------------------------------	--------------------------------------	--------------------------------------	--------------------------------------

NULLS	1	1	1	1	1	0	0	1	1	0	1	1	1
BASECORR	0	0	1	1	1	0	0	1	1	0	1	1	1
NORMALIZ	0	1	0	1	1	0	0	1	0	0	1	1	1
FIRSTDRV	0	0	1	0	0	0	0	1	0	0	0	0	0
SECNDDRV	0	0	1	0	0	0	0	1	0	0	0	0	0
MULTSCAT	0	0	0	0	0	0	0	0	0	0	0	0	0
KUBLMUNK	0	0	0	0	0	0	0	0	0	0	0	0	0
SMOOTHNG	0	1	1	1	1	0	0	0	0	0	1	1	1
RATIO	0	0	0	0	0	0	0	0	0	0	0	0	0
MEANCNTR	0	0	0	0	0	0	0	0	0	0	0	0	0
SGDERIV1	0	0	1	0	0	0	0	1	0	0	0	0	0
SGDERIV2	0	0	1	0	0	0	0	1	0	0	0	0	0
ABS2REFL	0	1	1	1	1	0	0	1	0	0	1	1	0

FIG. 21A

CLEAR TRANSMITTANCE RATIOS

DENOMINATOR TRANSFORM

NUMERATOR TRANSFORM	N U L L S	B A S E C O R R	N O R M A L I Z	F I R S T D R V	S E C O N D D R V	M U L T S C A T	K U B L M U N K	S M O O T H N G	R A T I O	M E A N C N T R	S G D E R I V 1	S G D E R I V 2	A B S 2 R E F L
------------------------	-----------------------	--------------------------------------	--------------------------------------	--------------------------------------	---	--------------------------------------	--------------------------------------	--------------------------------------	-----------------------	--------------------------------------	--------------------------------------	--------------------------------------	--------------------------------------

NULLS	1	1	0	0	0	0	0	0	0	0	0	0	0
BASECORR	0	1	0	0	0	0	0	0	0	0	0	0	0
NORMALIZ	0	1	1	0	0	0	0	0	0	0	0	0	0
FIRSTDRV	1	0	0	1	0	0	0	0	0	0	0	0	0
SECNDDRV	1	0	0	0	1	0	0	0	0	0	0	0	0
MULTSCAT	0	0	0	0	0	0	0	0	0	0	0	0	0
KUBLMUNK	0	0	0	0	0	0	0	0	0	0	0	0	0
SMOOTHNG	0	1	0	0	0	0	0	1	0	0	0	0	0
RATIO	0	0	0	0	0	0	0	0	0	0	0	0	0
MEANCNTR	0	0	0	0	0	0	0	0	0	0	0	0	0
SGDERIV1	1	0	0	0	0	0	0	0	0	0	1	0	0
SGDERIV2	1	0	0	0	0	0	0	0	0	0	0	1	0
ABS2REFL	0	1	0	0	0	0	0	0	0	0	0	0	1

FIG. 21B

DERIVATIVE SPACING:

SPACING = INT ($n^{1.4}$), $n = 1 : 10$

= 1, 2, 4, 6, 9, 12, 15, 18, 21, 25

FIG. 22

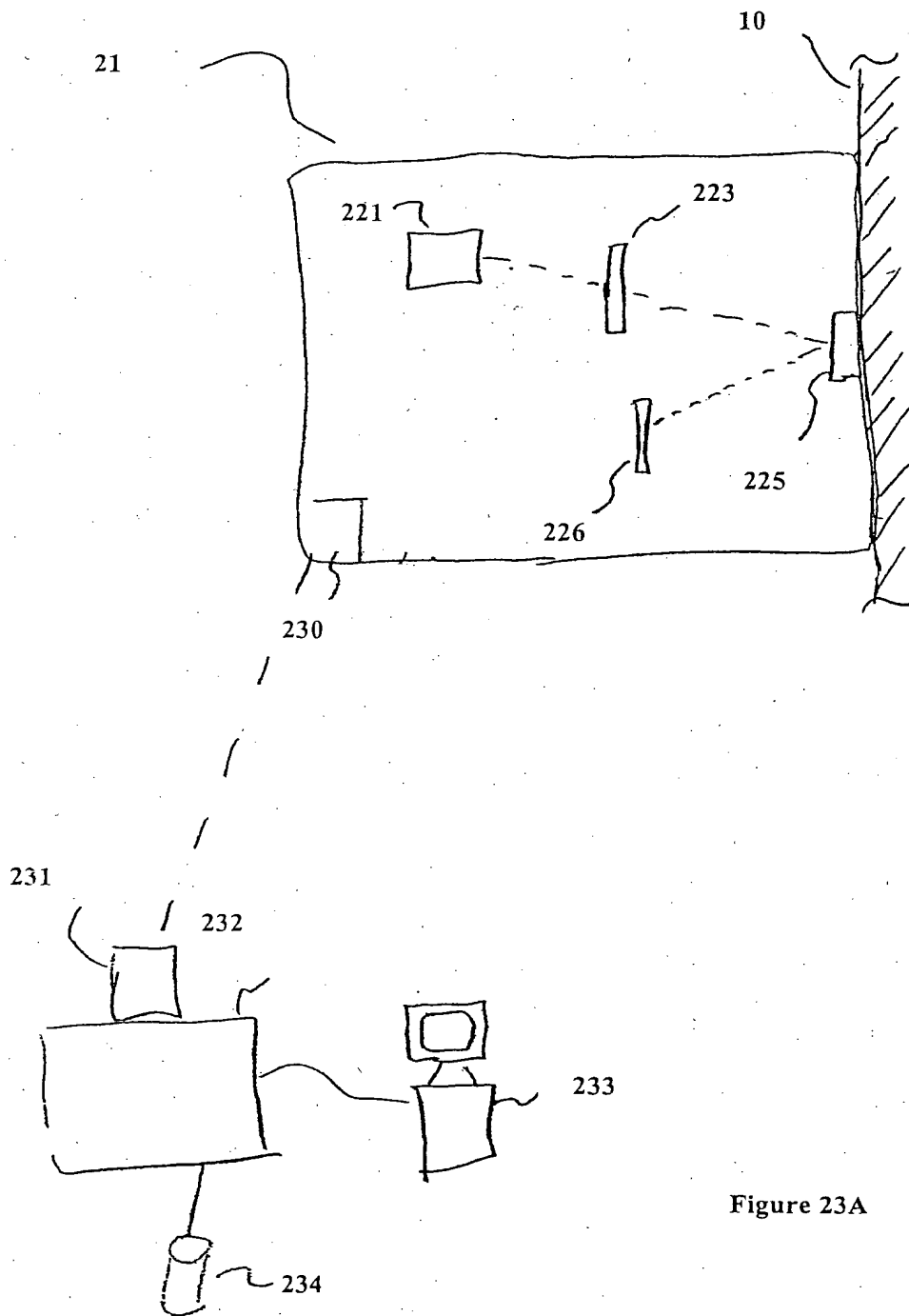
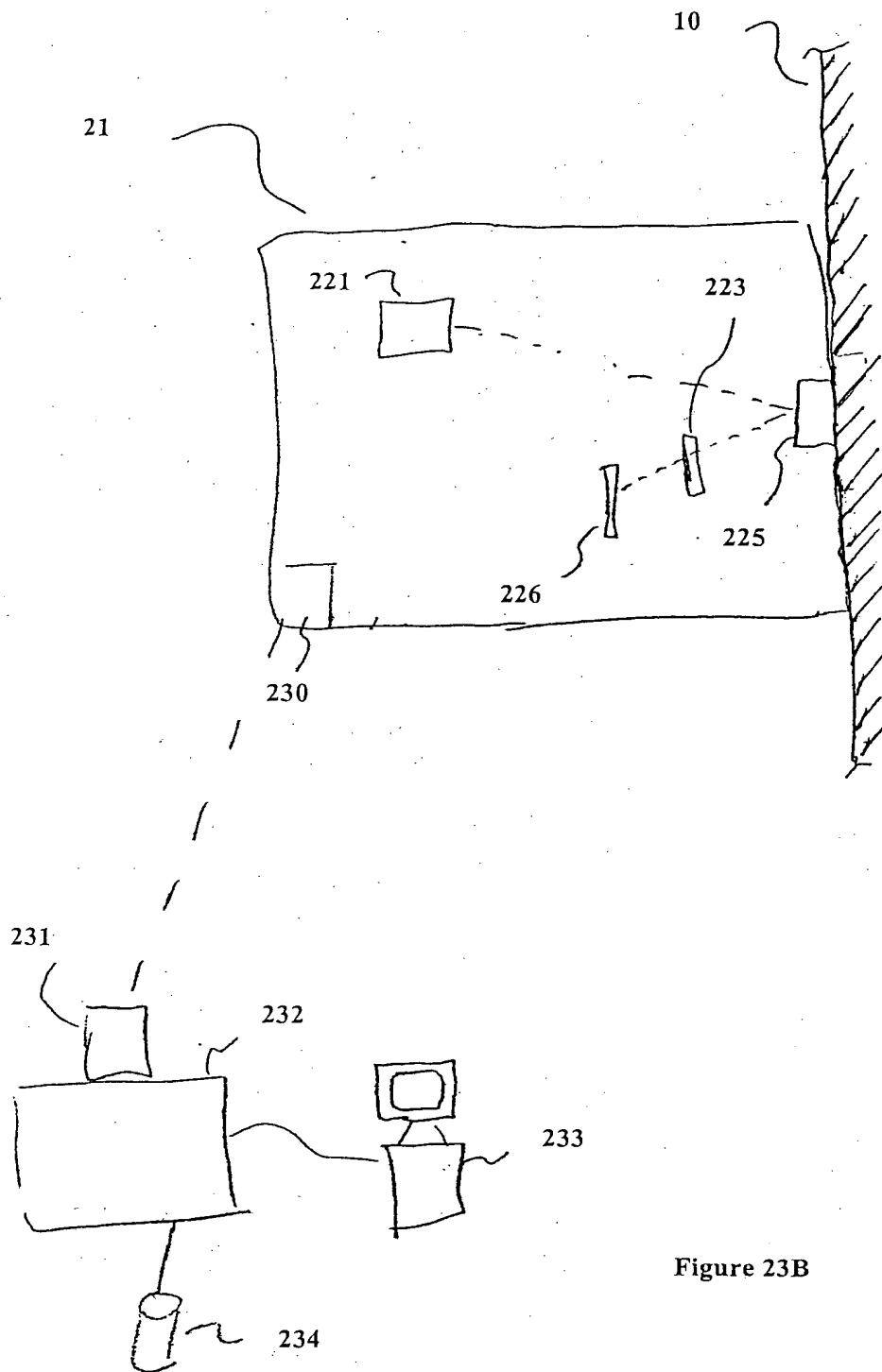


Figure 23A



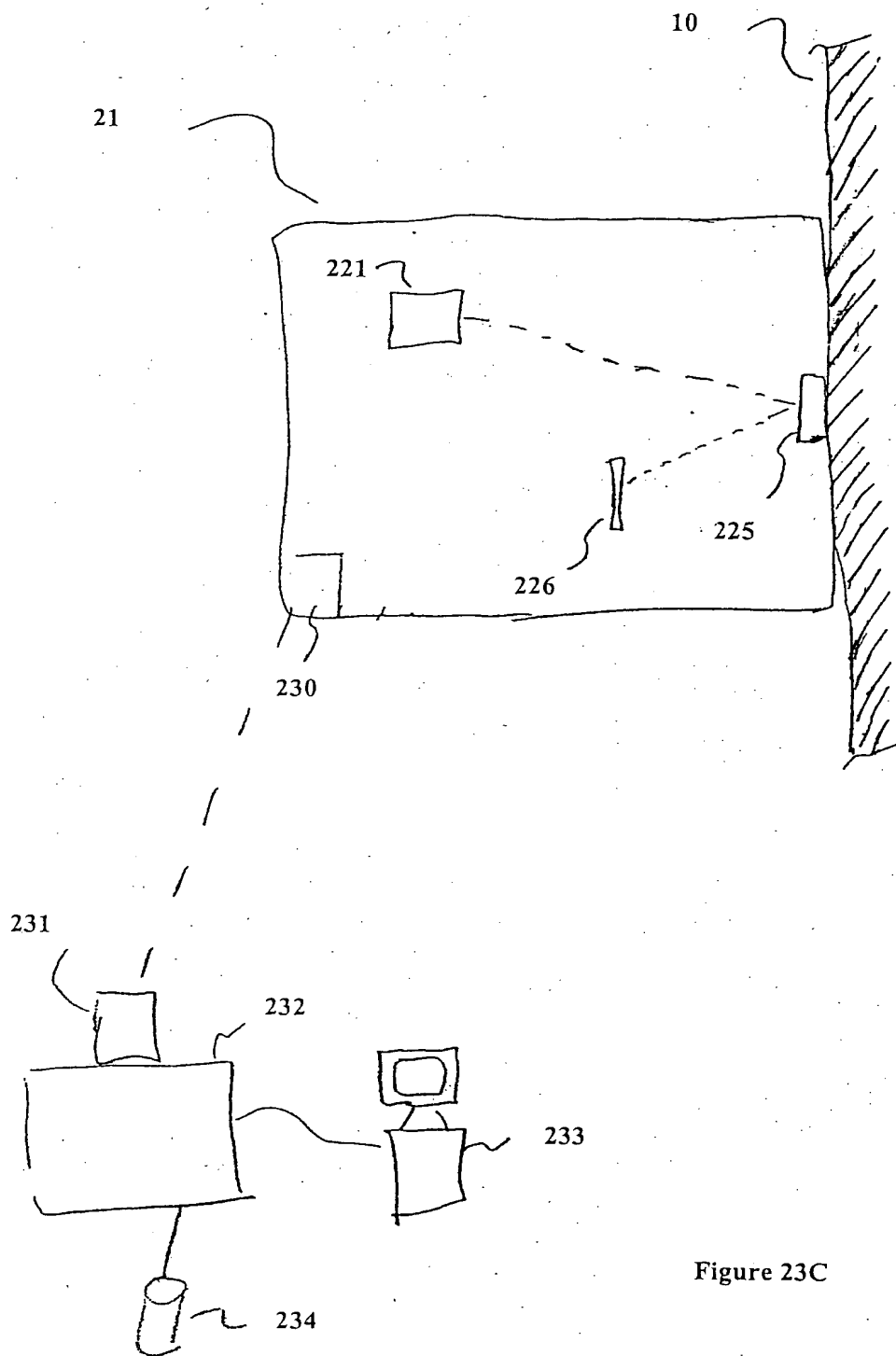


Figure 23C

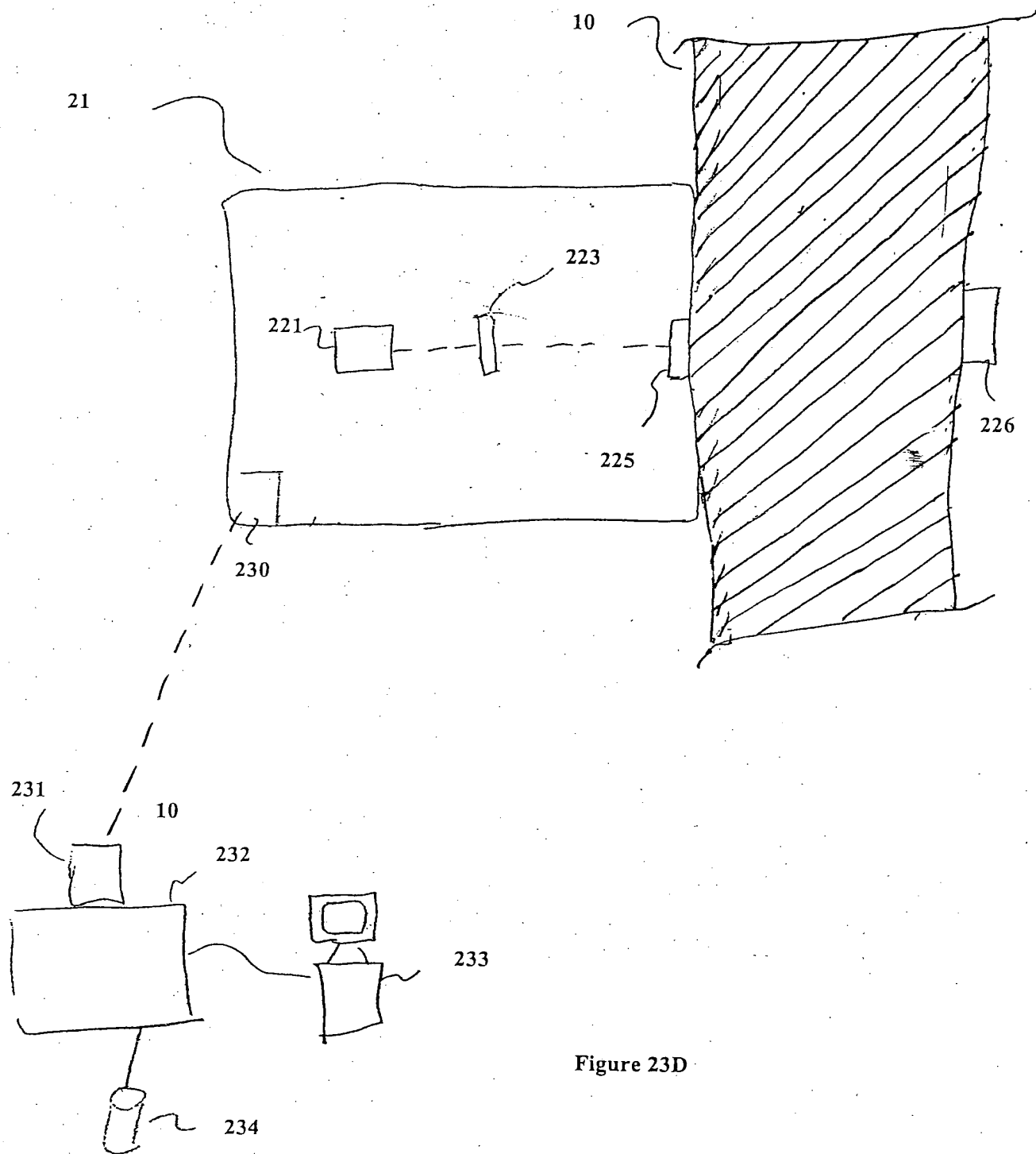


Figure 23D

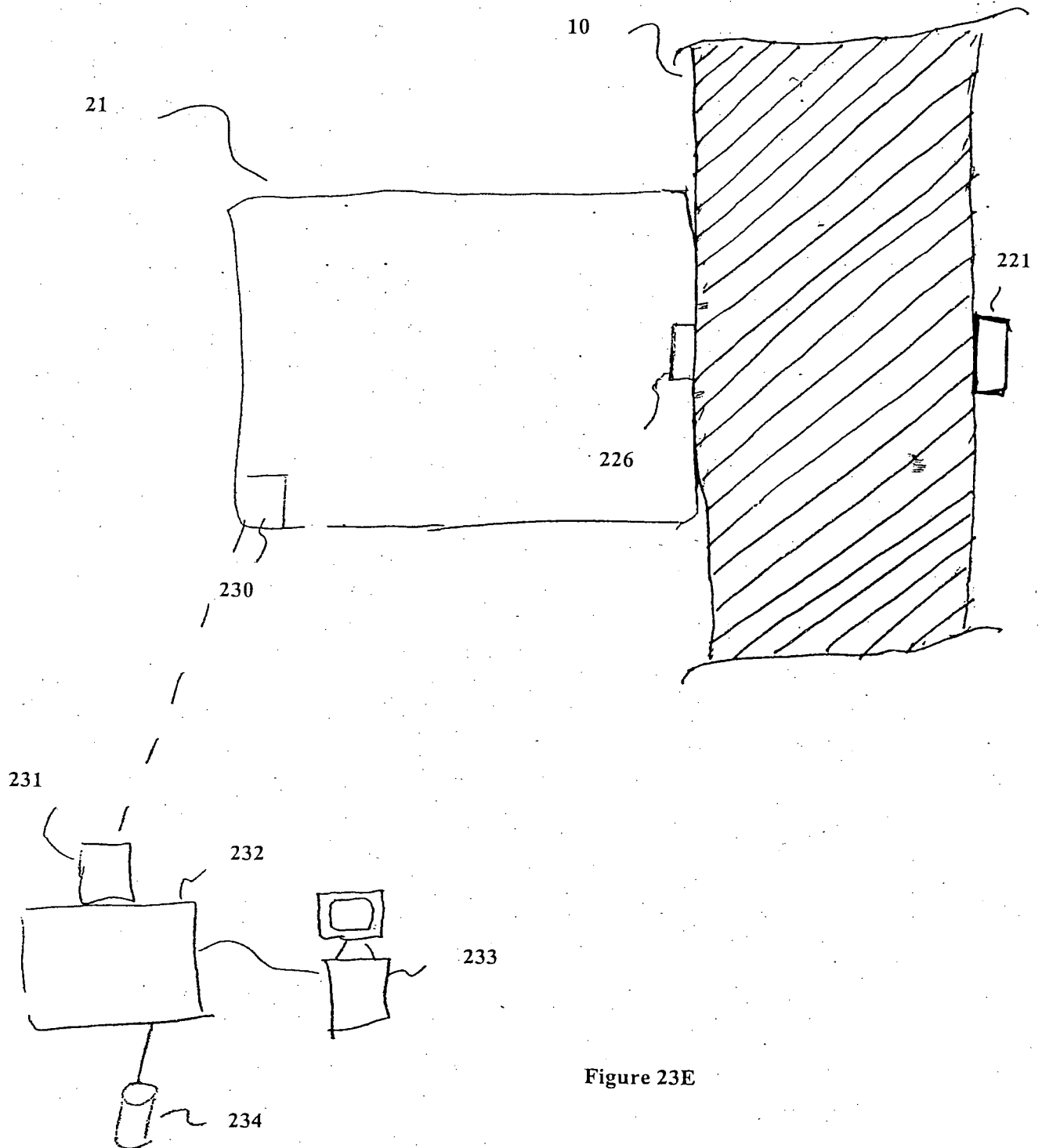


Figure 23E

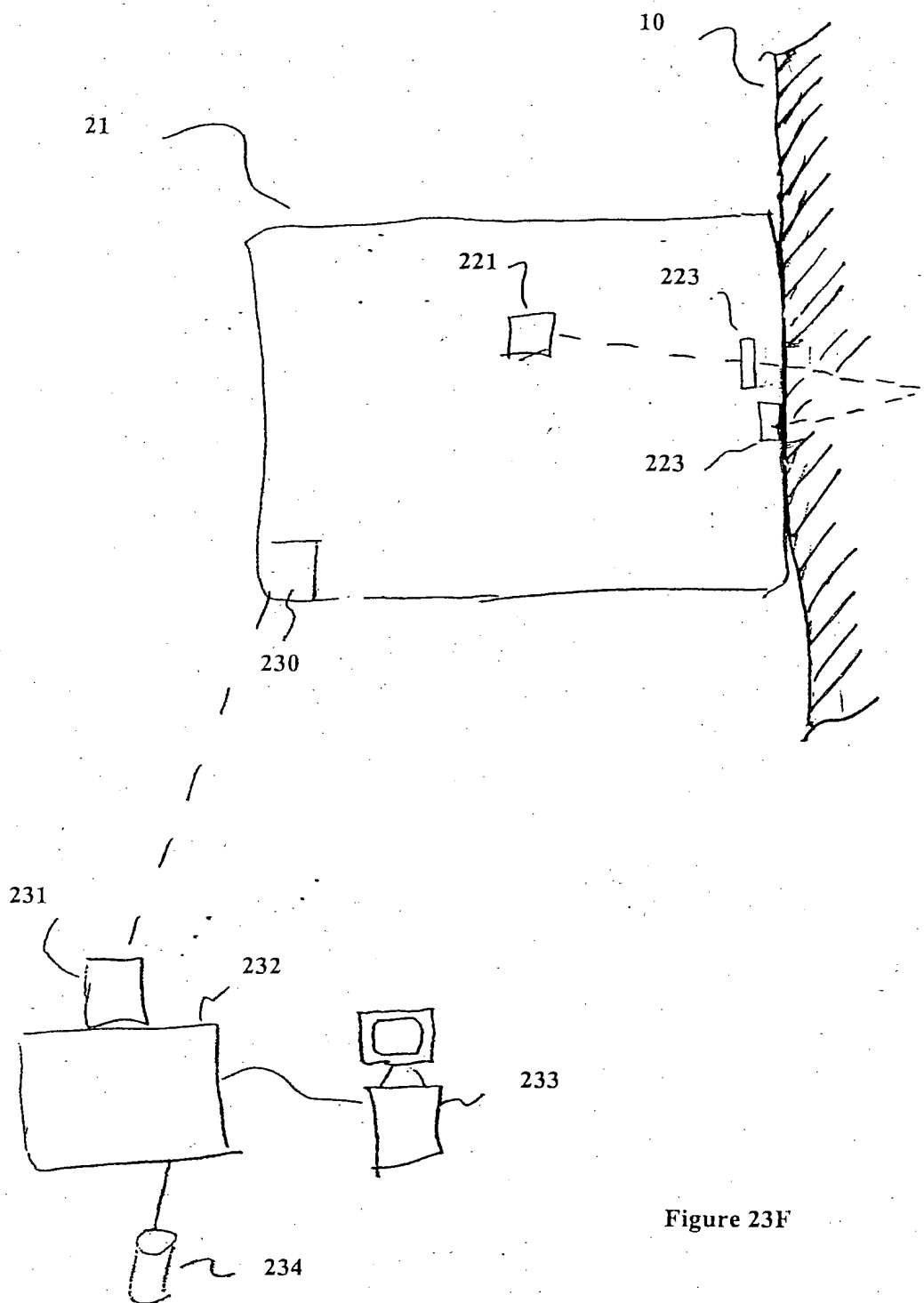
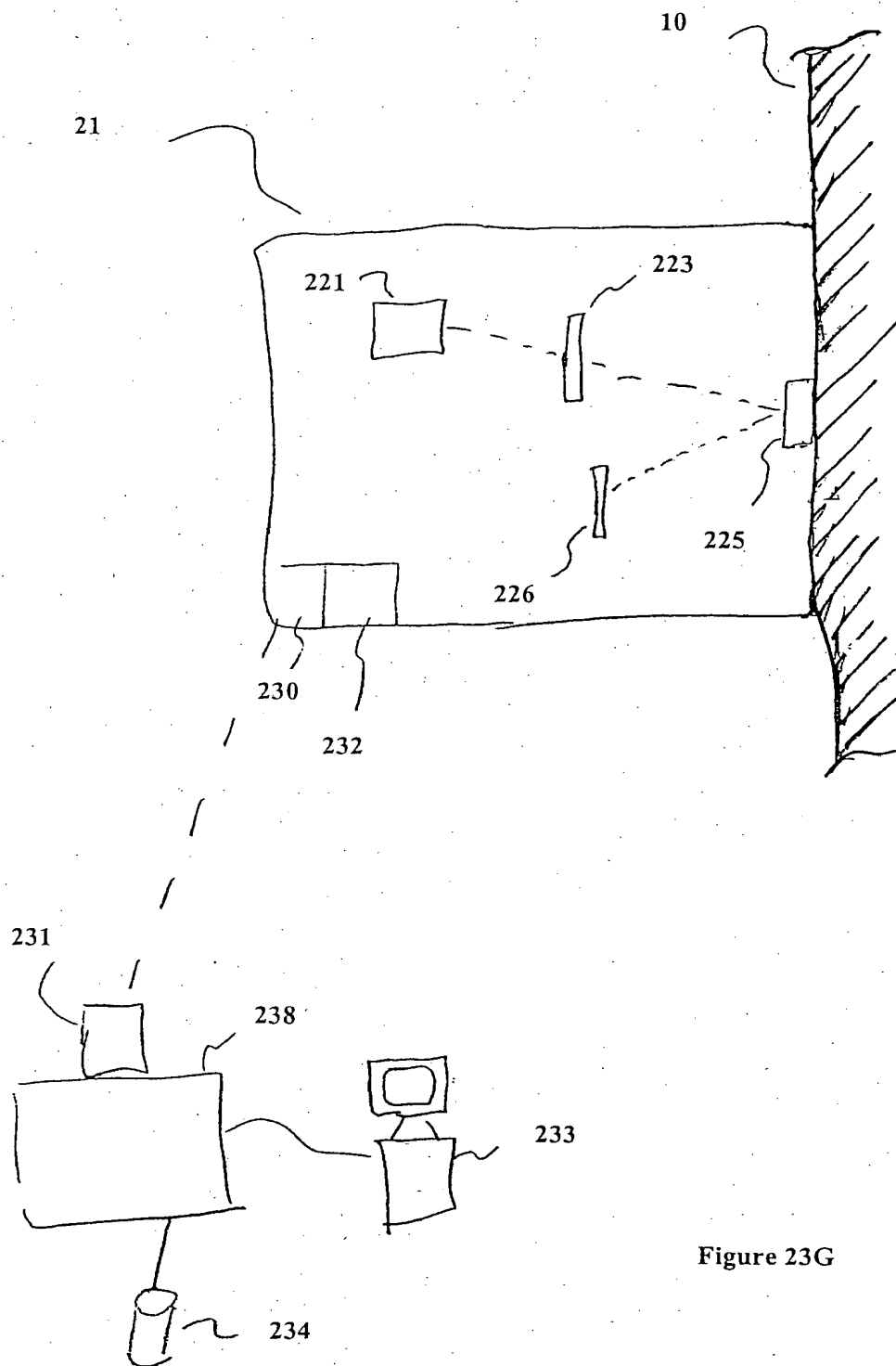


Figure 23F



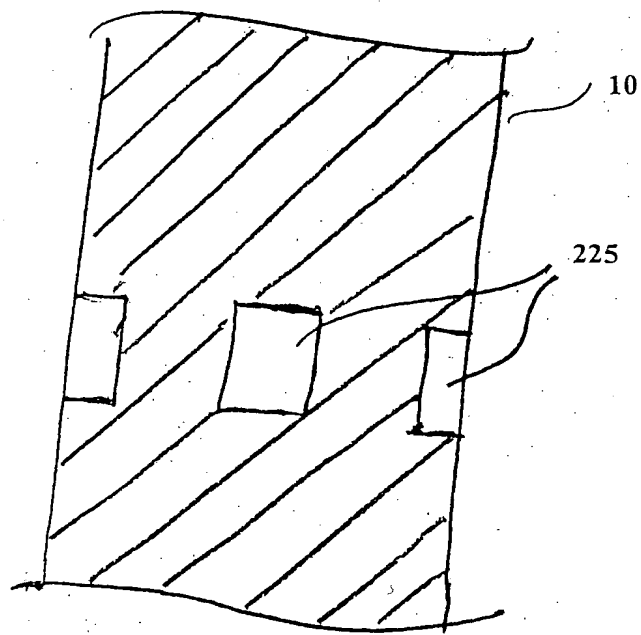


Figure 24

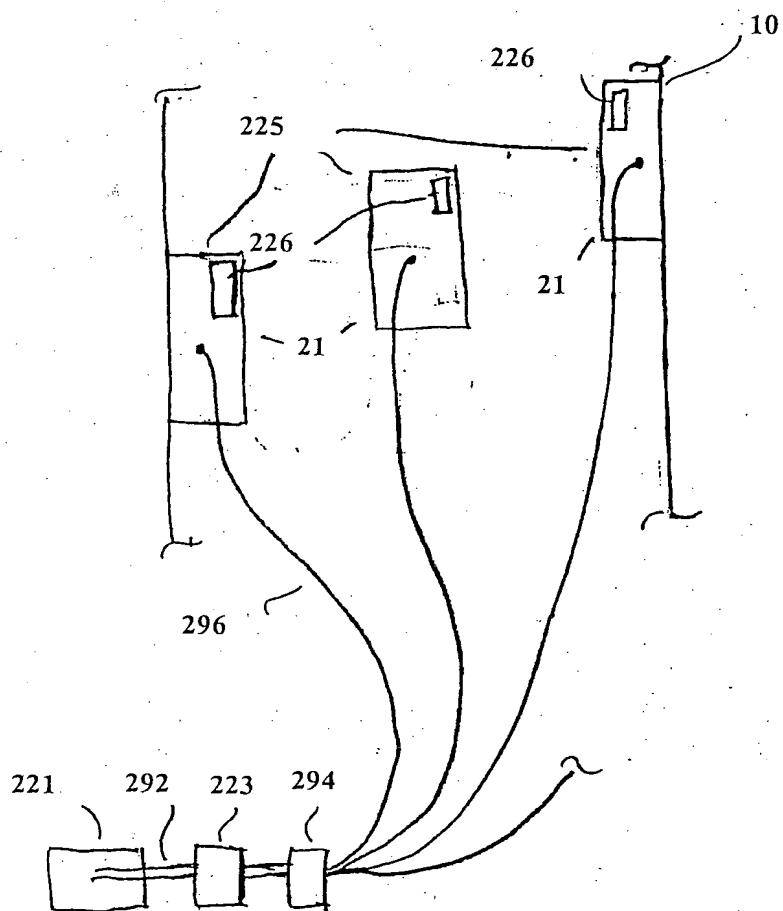


Figure 25

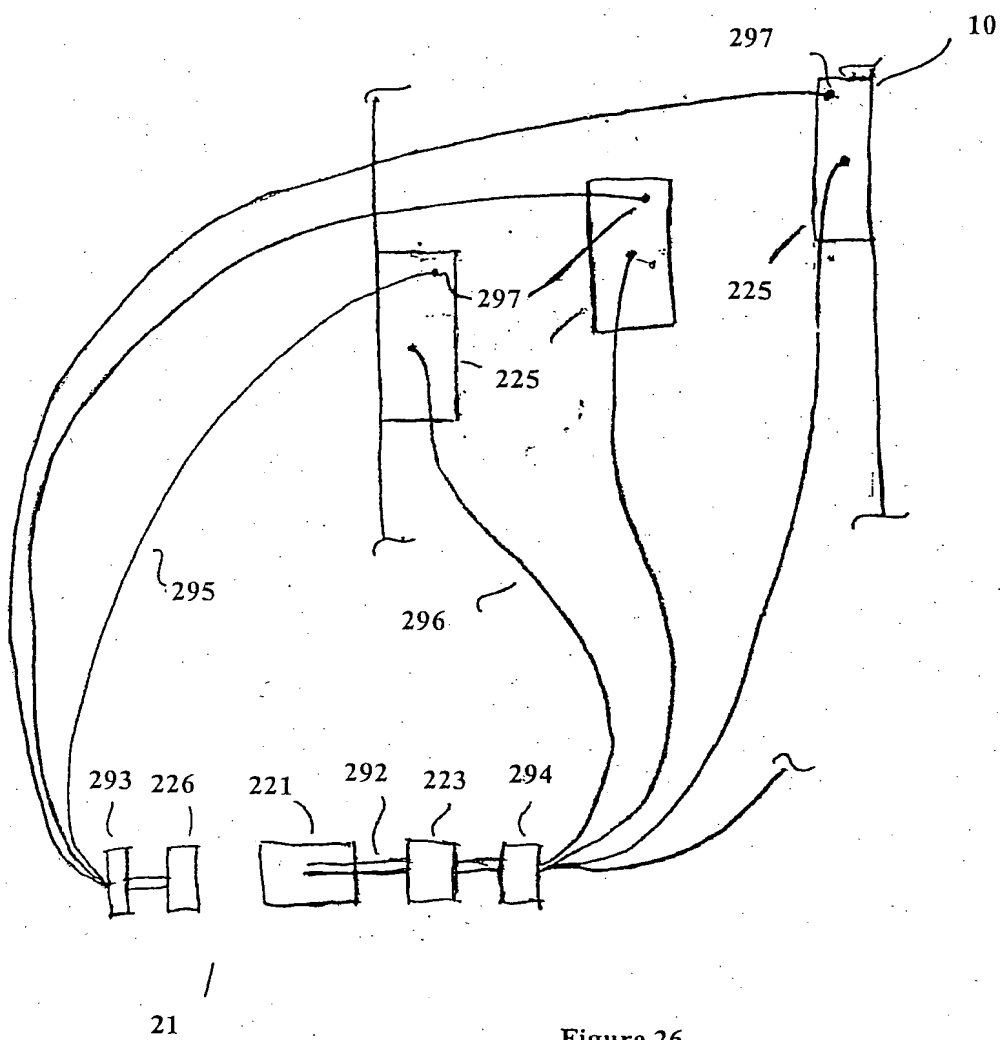


Figure 26

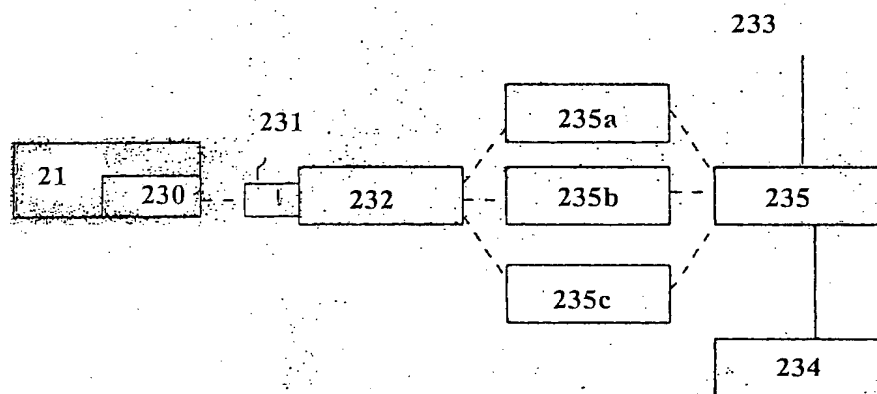


Figure 27

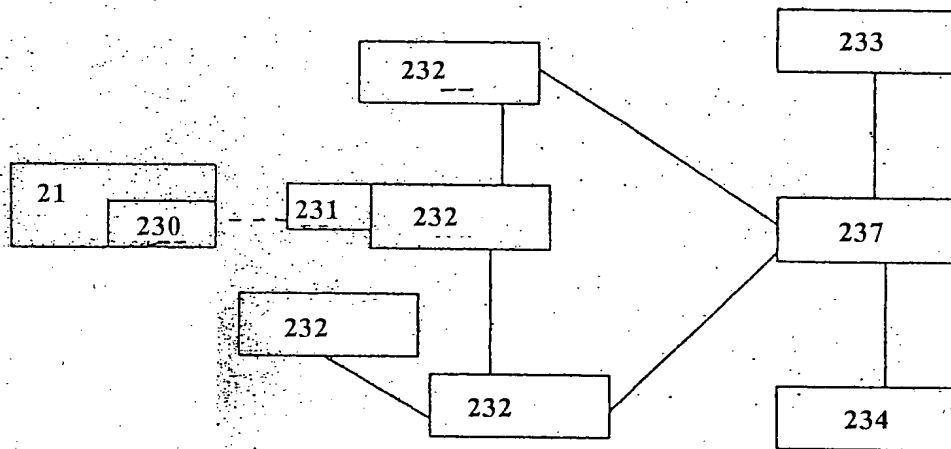


Figure 28

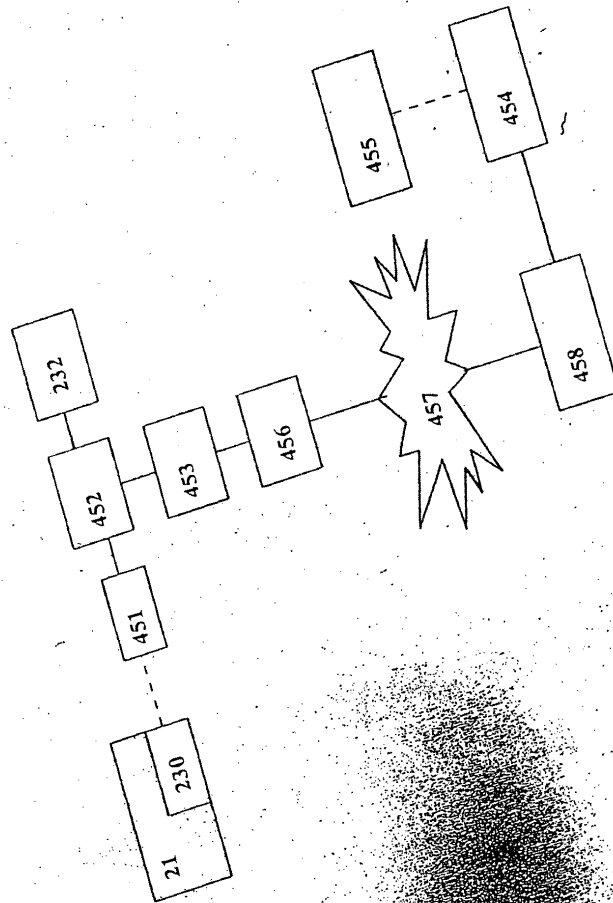


Figure 29

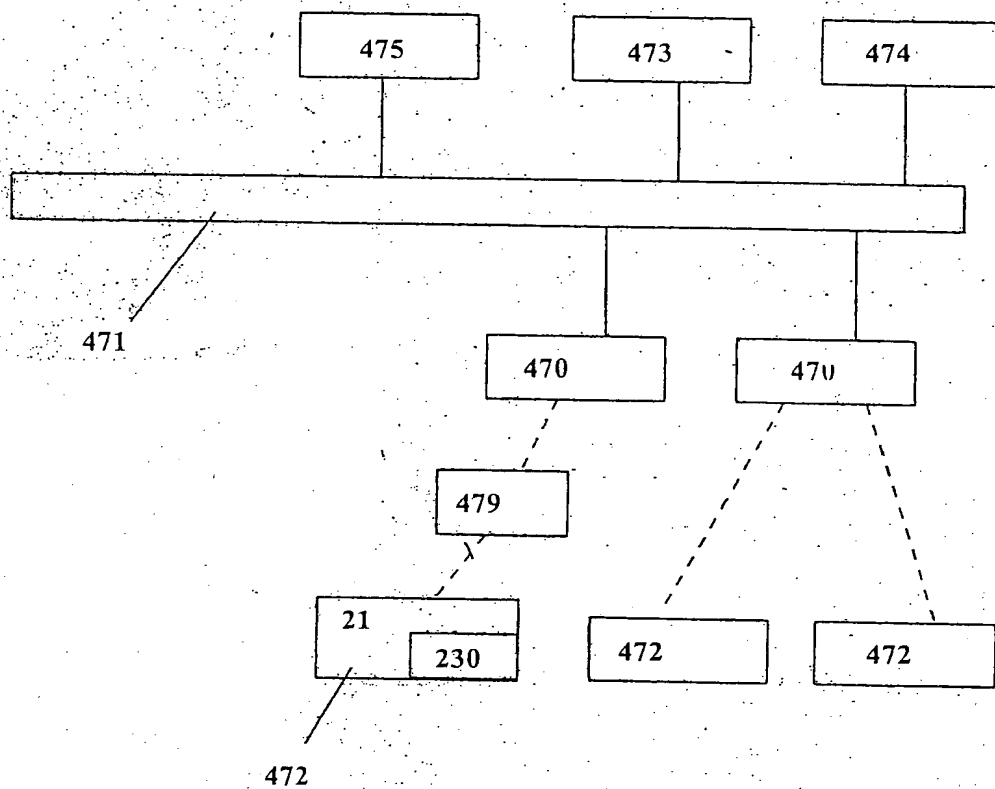


Figure 30

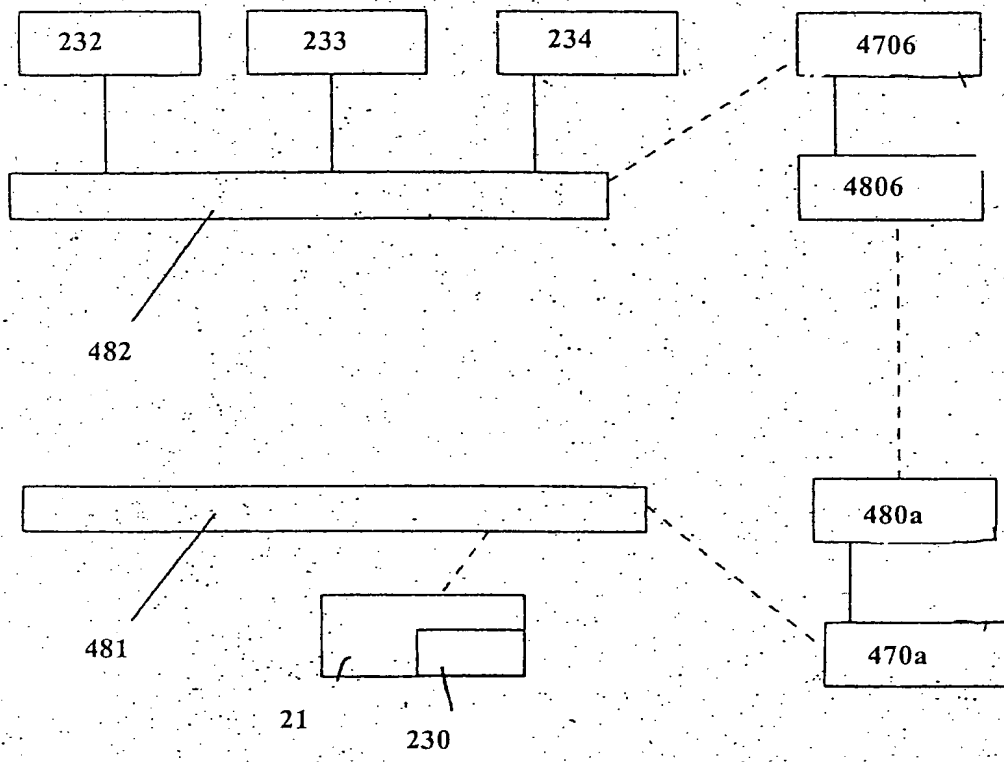


Figure 31

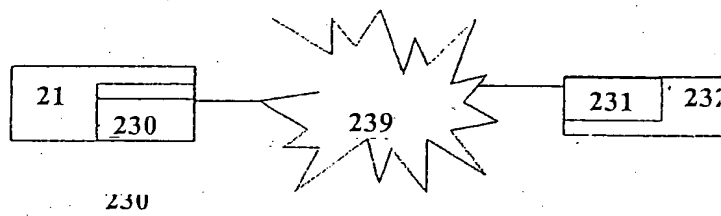


Figure 32

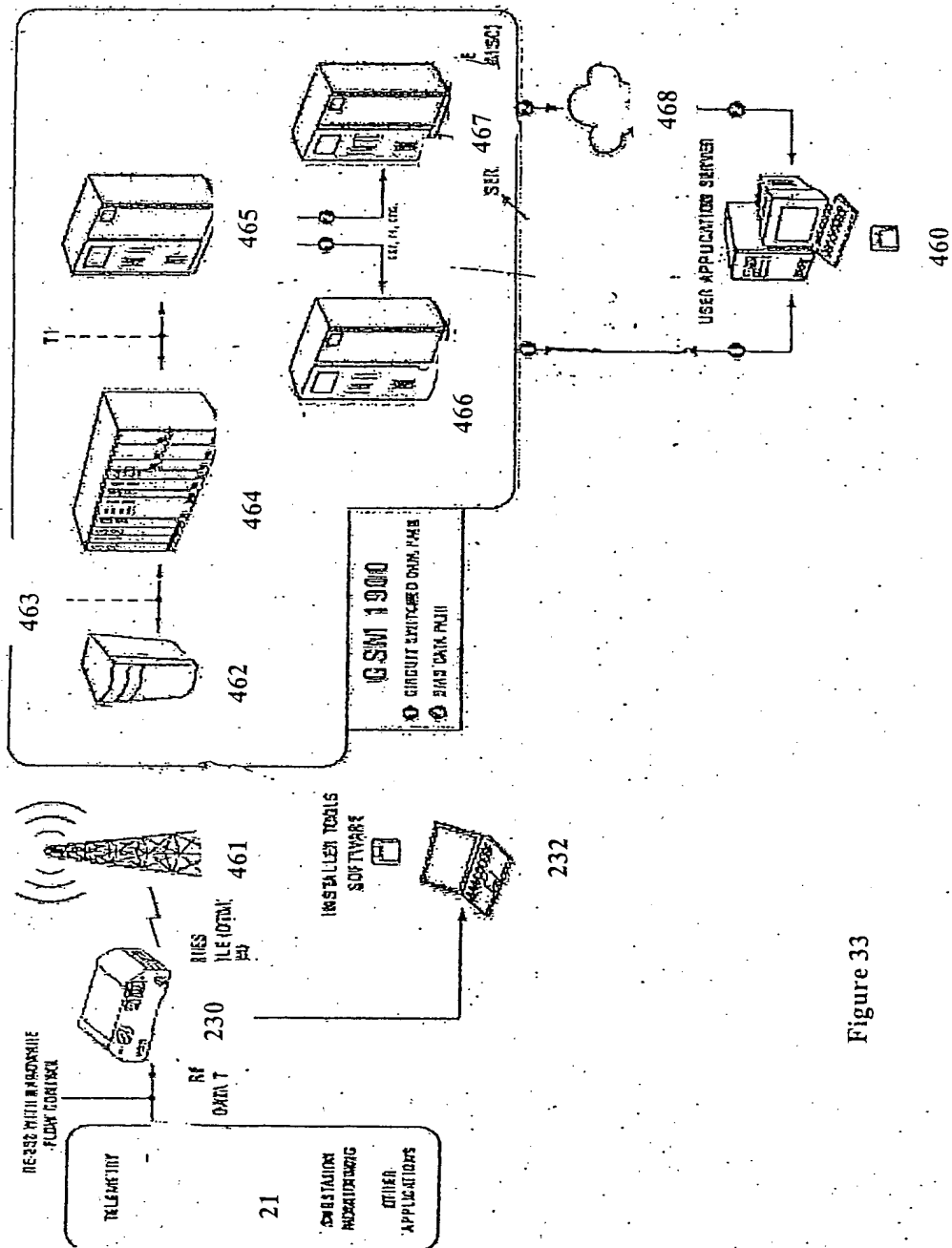
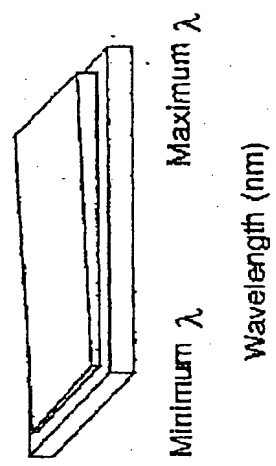
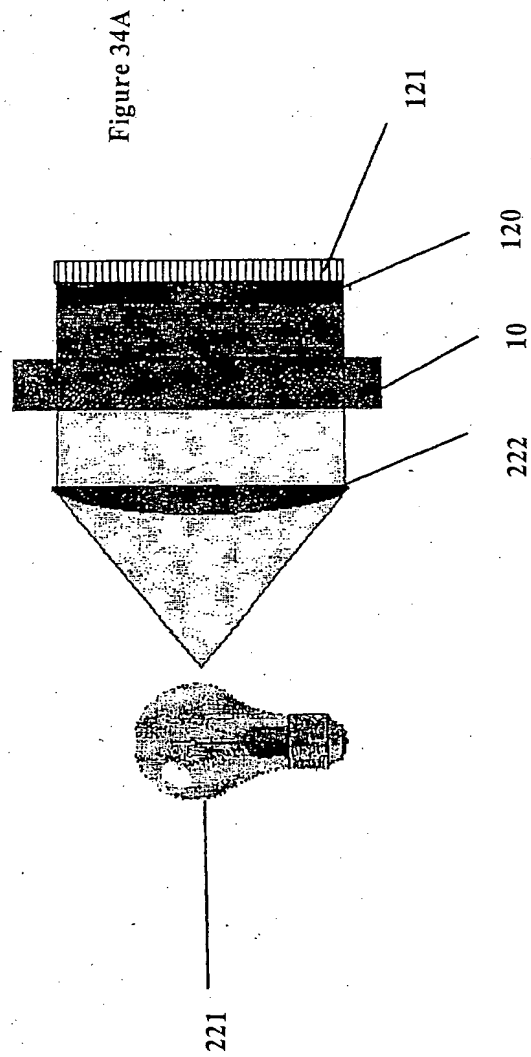


Figure 33



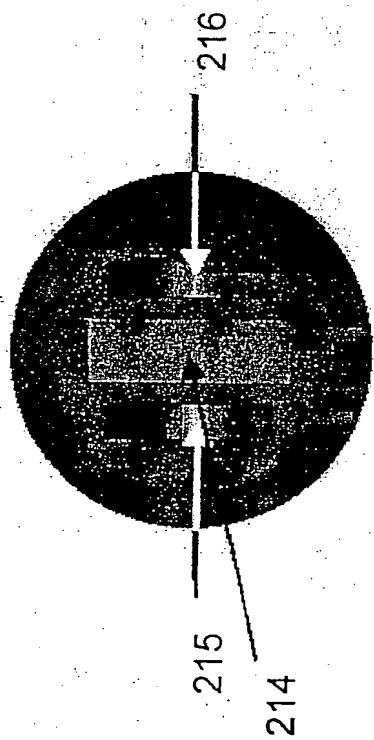


Fig. 35A

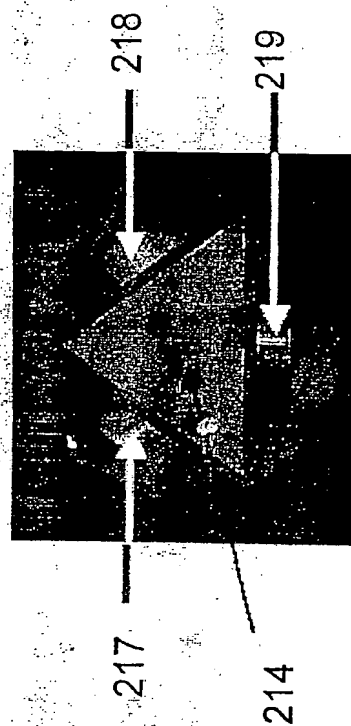


Fig. 35B

Figure 36

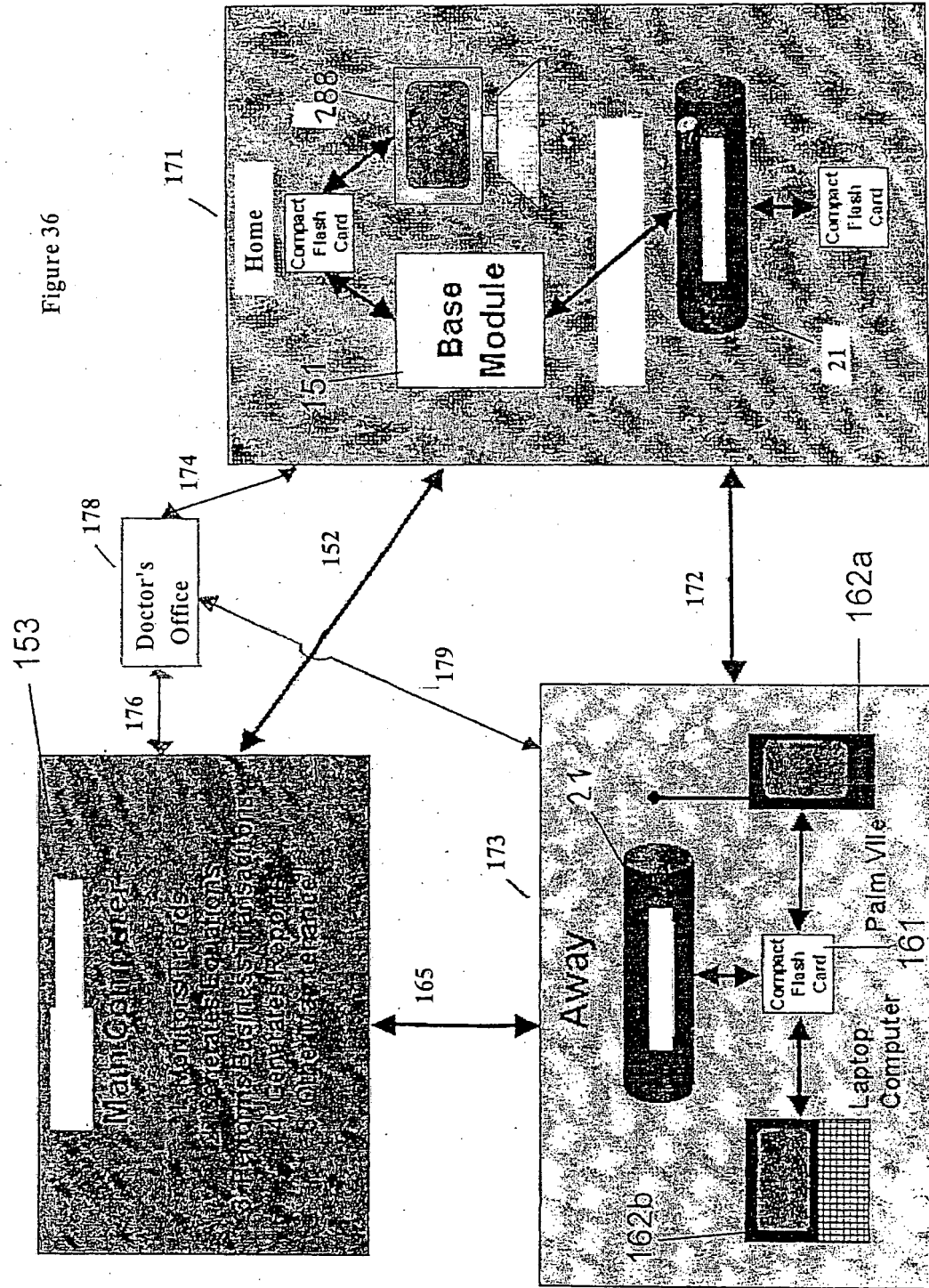
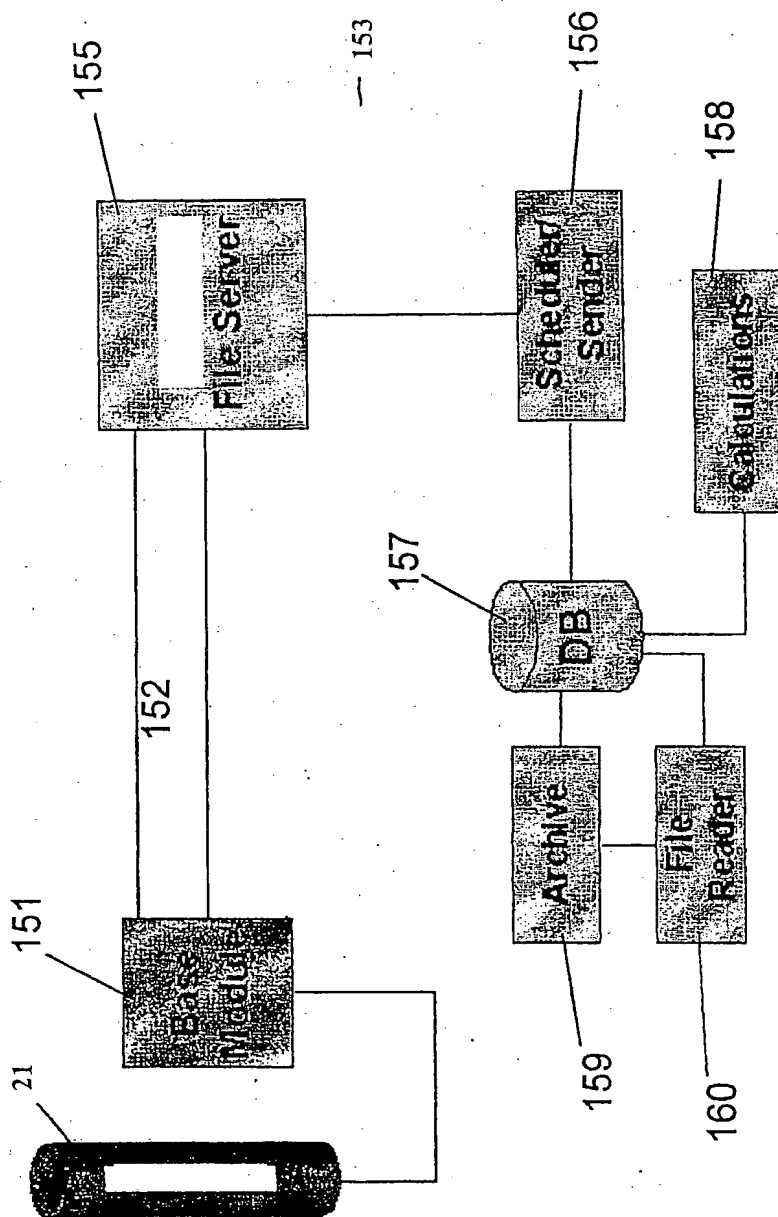


Figure 37



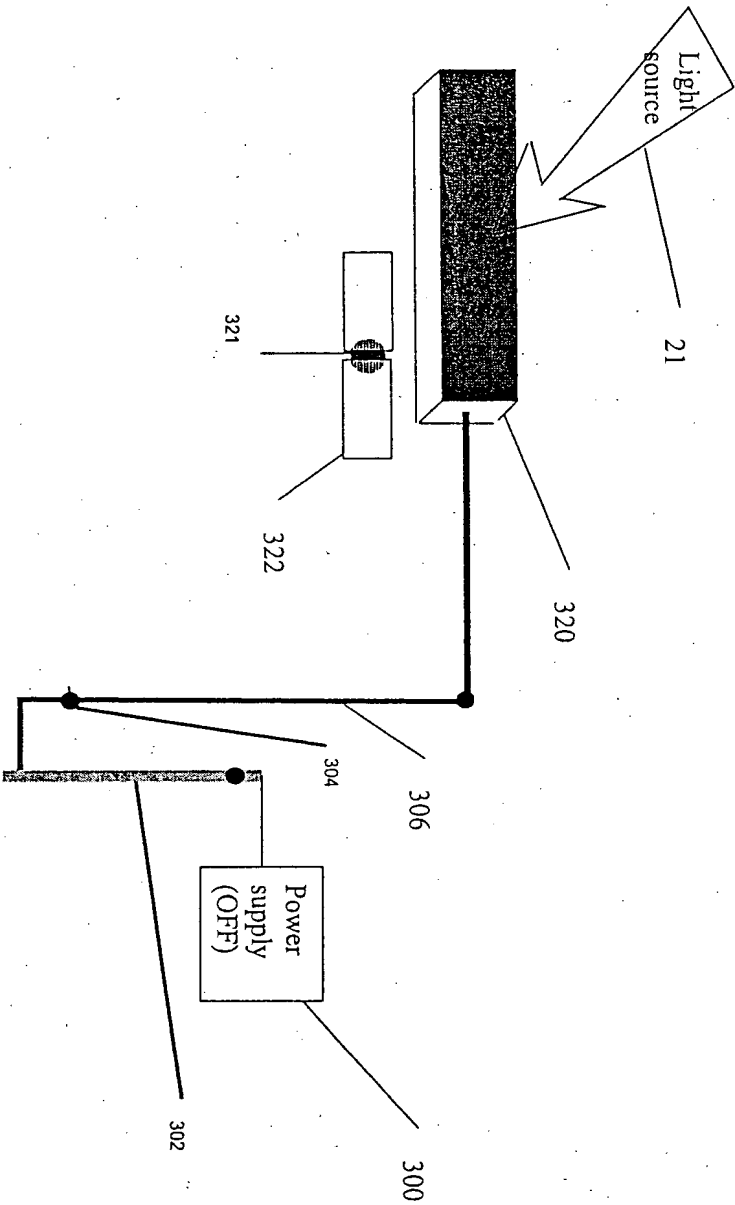


Figure 38a

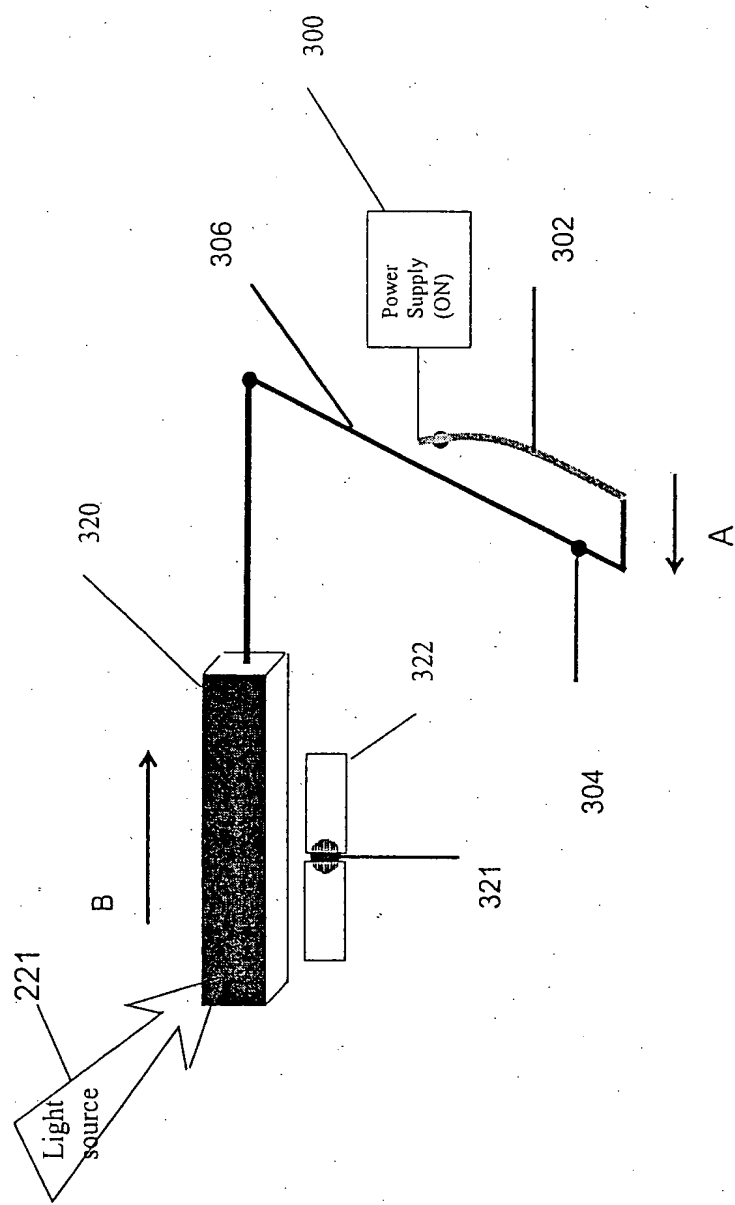


Figure 38B

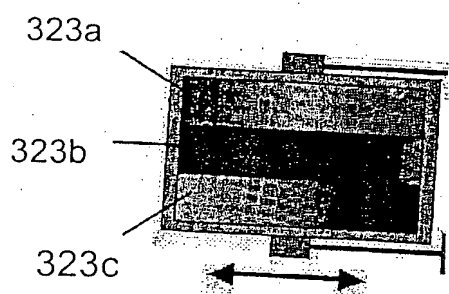


Figure 39a

324b

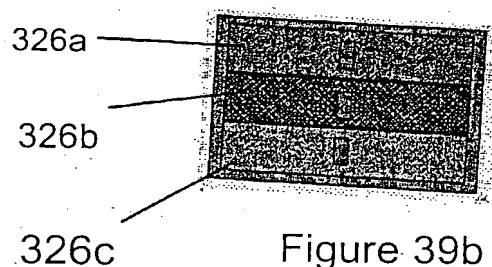


Figure 39b

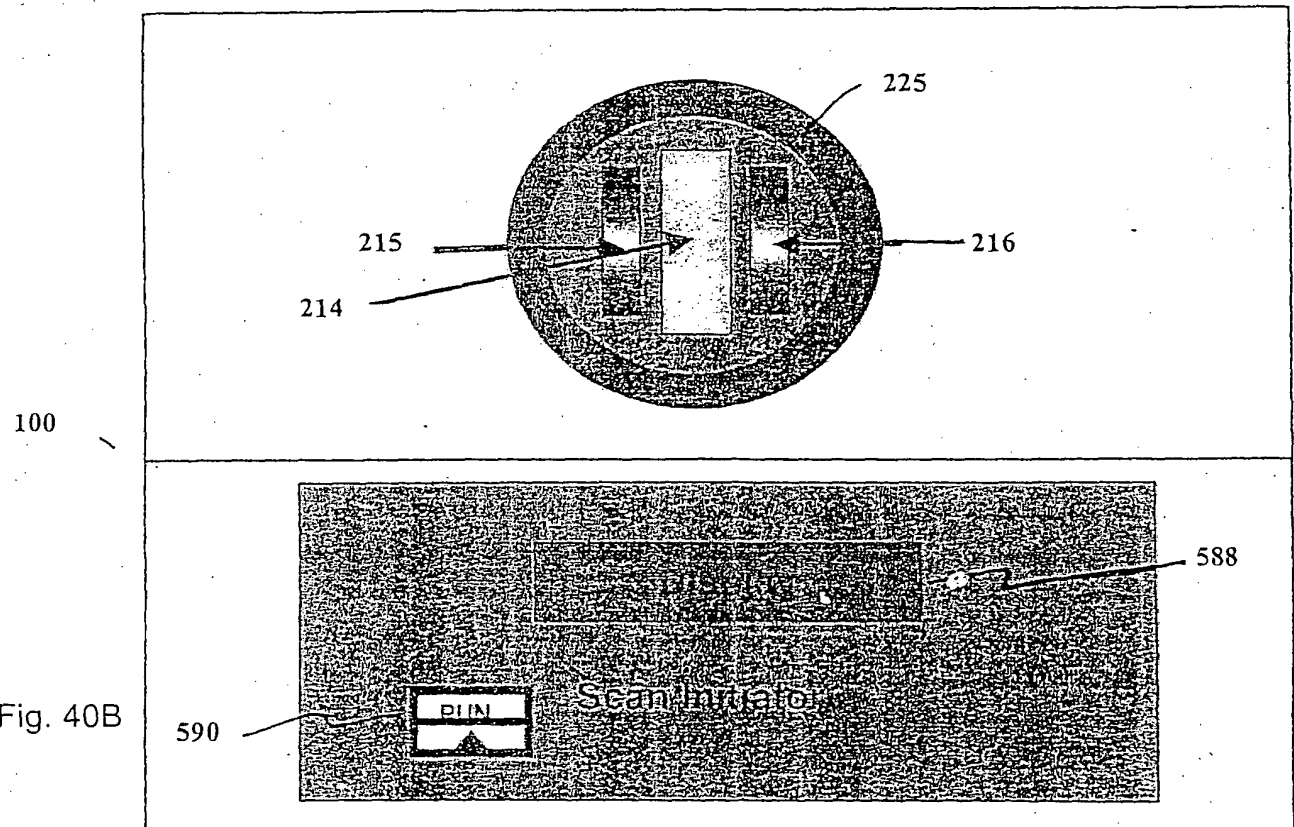
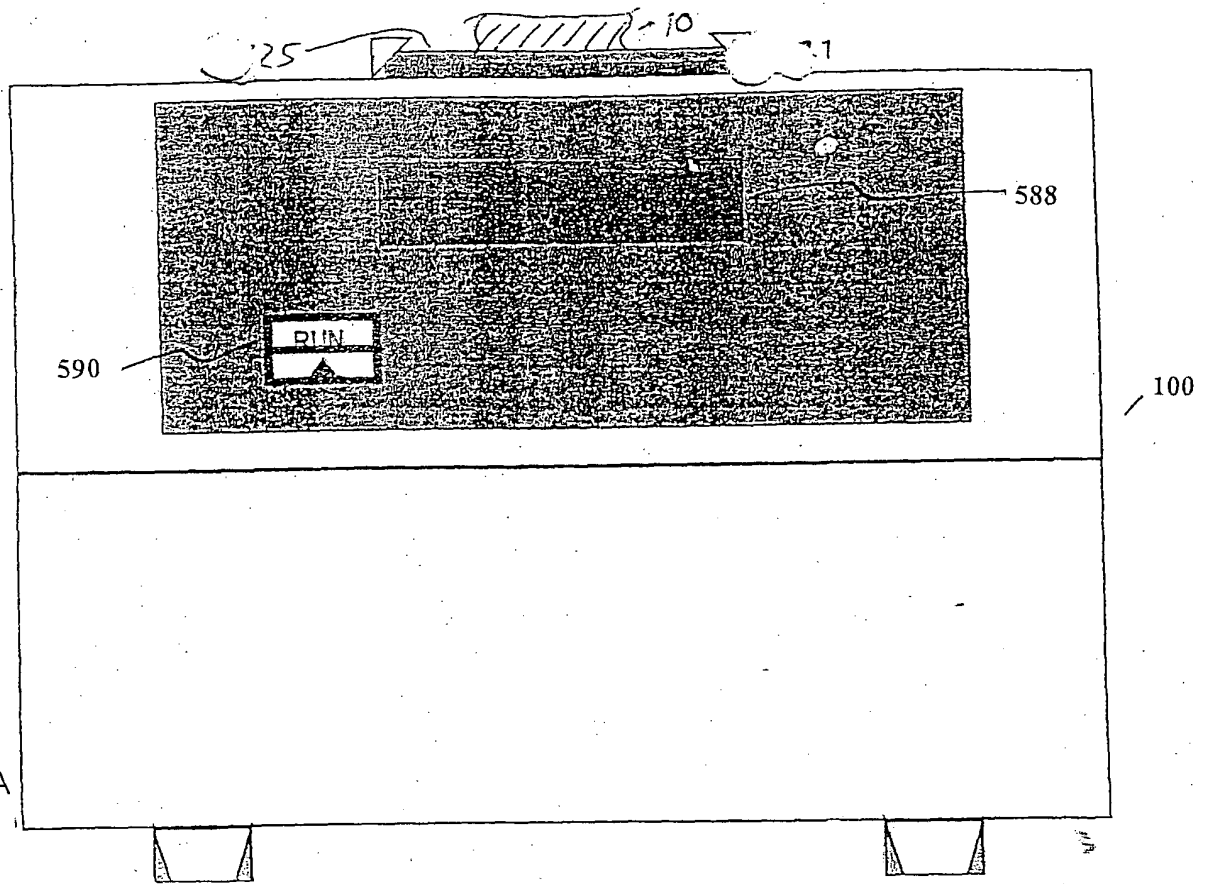


Fig. 40C

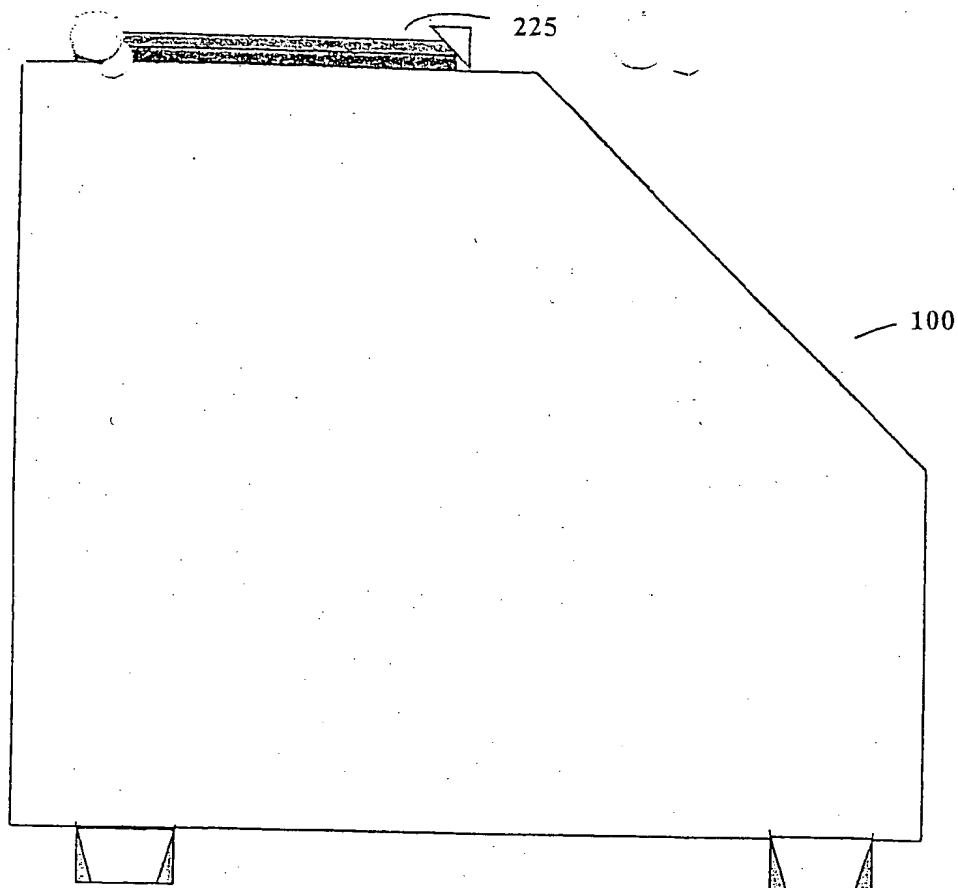


Fig. 40D

